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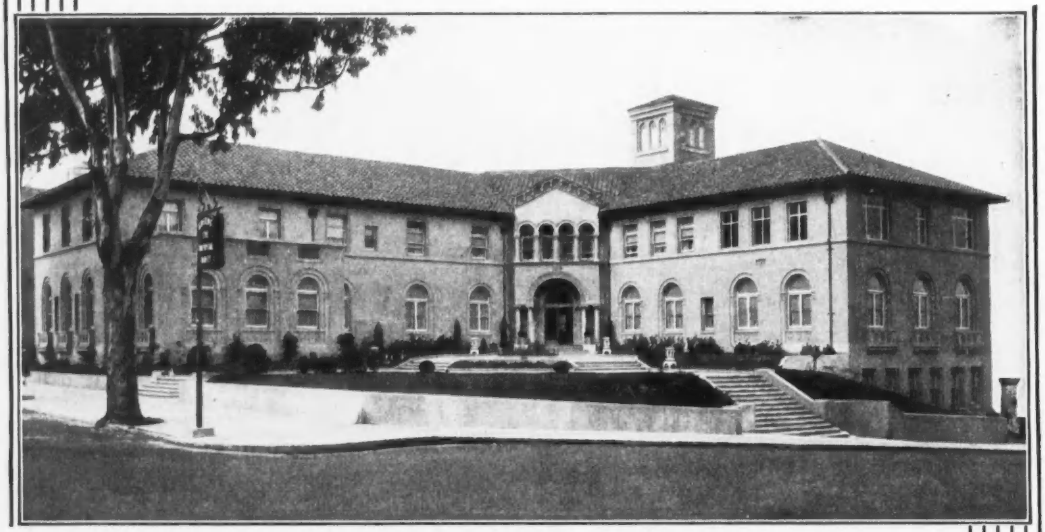

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THE DEEP MYCOSES IN THEIR SURGICAL ASPECTS—THE RÔLE OF LABORATORY DIAGNOSIS*

By Fred D. Weidman, M. D.
Philadelphia

BACK of every assemblage, be it lay, or medical like this, of course there is a reason. The question can always be raised under such circumstances, "Why are we here?" To come immediately to the point—it is *fungus diseases* that you have chosen as a subject to engage such an outstanding institution as the California state meeting, and after that I dare say that it is the presence of a distant traveler like myself here that is the most cogent witness of the increasing importance of studies in general mycology and in your coccidioidal problem in particular. It is eloquent that you have seen fit to draft this willing conscript, involving over six thousand miles of time, thought and all that go with them.

This symposium, too, is something of a commentary—a compliment, on the level of medicine as practiced in California. By this I mean that, by and large, the type of subject engaging medical or other thoughts generally has its strongest appeal in connection with the bread and butter of everyday life; that is, for us, syphilis, tuberculosis, cancer, acute infectious fevers, and so forth. It is only after we feel that we have become more or less thoroughly acquainted (or perhaps better—self-satisfied) with these outstanding problems that we feel justified in undertaking adventures into less traveled fields in which the sights are at least new, even though they be less frequently met. Thus, to be concrete, the general practitioner, even if not a qualified expert, knows his pulmonary tuberculosis—after a number of years can arrive at a reasonably sure diagnosis. But now, while he still constitutes a real service to mankind at large, in the ordinary course of events he will encounter knotty and unusual cases from time to time where he will come to a standstill as to the final diagnosis; indeed, such cases are the ones that will be lasting memories with him—upstanding and permanent hurdles which he will view in retrospect and which will comprise the fascinating (or disgusting) problems to vary the monotony of an otherwise colorless experience. Unless this practitioner is acquainted with the existence of such other mimics of tuberculosis, as syphilis, bronchiectasis, pulmonary spirochetosis, yeast infections, coccidioidal granuloma, aspergillosis, and so forth, he will not alone rob himself of the variety which leavens the routine, but he will not be doing his utmost for his fellow man.

To come at last to the point I am leading to, I take it that this meeting and this subject connote advance in California medicine consistent with the advances California has made in horticulture, agriculture, mining, engineering, shipping, the motion picture industry and the other members of the long, long list. That is, I would not claim that fungi are becoming increasingly important as pathogens; the probability is that they have been of comparable importance for centuries past; it is not that they are themselves rare, but that their recognition is rare. Now that they are becoming recognized—now that they have elbowed themselves so relentlessly into your medical picture, we have the spectacle here of Californians addressing themselves to the new problem as they have so successfully to tularemia, bubonic plague, botulism, foot and mouth disease, rabies, and a host of other diseases.

So here we are gathered; I daresay in the largest assemblage of mycological workers the United States has ever known—Ophüls, Rixford, Morrow, Montgomery, Moffitt, Meyer, Bowman, Cummins, to mention only a part. We are all members of a convocation for devising ways and means against a problem which fortunately (unlike cancer) has become concrete and offers a definite target at which to aim. My own humble part is to give you what I have on the basis of experiences which have been spread, if anything, more into the academic than the practical aspects of mycology.

SCOPE AND LIMITATIONS

I am glad indeed that I have been relieved of the necessity of including the superficial mycoses. Even confined as I am today to the deep ones, it is still a very large order, and you may well imagine that it will be necessary, and doubtless agreeable to you, that I but give you a general panorama of the situation. But at the same time, I will take the liberty of dipping into details from place to place where it becomes necessary to clear up certain misunderstandings that are particularly

* From the Laboratory of Dermatological Research, University of Pennsylvania.

* Read before the joint meeting of the sections on Pathology-Surgery of the California Medical Association at the fifty-ninth annual session, Del Monte, April 28 to May 1, 1930.

rife; which have baffled me in the past, and may save you some trouble. From conversations I have had, I take it that the average general pathologist of today is in very much the same situation mycologically that I was when I finished a ten years' training in general and special pathology under such masters as Allen J. Smith, Joseph McFarland, and Herbert Fox. With this realization I shall feel much less embarrassment in dwelling upon certain fundamentals.

As suggested, I shall confine my remarks to the following fungus diseases: streptothricosis (including actinomycosis), blastomycosis, torula infection, coccidioides infection, sporotrichosis, and miscellaneous ones such as Madura foot and "gummatous ulcers"; whereas, as tinctured in the title, this presentation has two phases, one clinical and the other laboratory, I trust that they will be found to overlap just as all of our specialties overlap in best modern practice.

THE SURGICAL PHASE

In order to bring the matter home to you as forcibly as possible, I am going to ask the surgeon that he imagine, just for a moment, that there were no such institutions as the microscope, the test tube, the laboratory, and pathologist in general. Keep before your mind the list of deep mycoses already enumerated; that is, the streptothricoses including actinomycosis, blastomycosis, torula, sporotrichosis, and coccidioides. With syphilis and tuberculosis rampant as they are, what proportion of these mycoses do you imagine the average surgeon could pick up diagnostically? It goes without saying that the clear-cut cases of actinomycosis and Madura foot with their sulphur or other grains, the classical cases of sporotrichosis with the linear distribution of lesions along the course of lymphatics—a certain proportion of such could be separated from the general mélange of other indolent, ulcerative, sinus-producing, more or less proliferative, slowly destructive lesions of the skin, bone, and viscera. As to blastomycosis, most cases require dermatologic knowledge for diagnosis, but even here, as is even more the case with sporotrichosis, coccidioidal granuloma and the rest of the list, laboratory aides are becoming more and more requisite as we come to realize how varied the expressions of these deep mycoses may be and as we aim to approach 100 per cent efficiency instead of remaining satisfied with a respectable batting average. We have always invoked syphilis as the type example of a protean disease, but dermatologists by now know that tuberculosis is almost equally protean, and the California profession, I am sure, realizes that the mycoses likewise belong in the same list. Incidentally, the dermatologist is particularly appreciated when he relieves the situation with a diagnosis of bromid or iodid granuloma, or perhaps factitial dermatitis; all of these are conditions where he plays a unique part diagnostically.

I feel, therefore, that from the standpoint of surgical diagnosis, there are rather severe limitations to the purely clinical approach. Only one or two of the mycoses named are clinically diagnosable 100 per cent under the best of conditions, and in the second place numerous cases of each will be so atypically expressed as to quite prevent the purely clinical diagnosis. Even the presence of syphilis and tuberculosis will not be final differential diagnostic criteria; with both diseases ubiquitous, it is quite obvious that mycosis may appear in a syphilitic or tuberculous subject equally as well as typhoid fever; this is all the more true in localities where fungus disease is endemic and where the factor of statistics thus does not play so large a differential part. Indeed, I feel that *the association of tuberculosis with mycosis should be tested with every case of proved mycosis;* certainly it is a principle that fungi become invasive much more readily in connection with preëxisting diseases. We have found this to be the case in connection with pulmonary aspergillosis of birds at our Philadelphia Zoölogical Garden[1,2]; this point should be further inquired into as a generality for human mycotic disease.

The Therapeutic Phase.—The moment one mentions therapeutics in fungus diseases, the medical mind automatically turns to iodin. If there is such a thing as a list of specific remedies in medicine, iodin belongs on it in connection with the mycoses in general. Not that it is invariably a specific for a given mycosis, or that it is a specific for every mycotic disease, but as much can be credited to it as a specific as to mercury and arsenic in syphilis, iron in the anemias, quinin in malaria, and so forth. In none of the instances cited is specificity invariable and absolute. With iodin so useful, hence it is that, again, as in syphilis, essentially surgical procedures have limitations in connection with mycotic disease in general. By and large, in blastomycosis, sporotrichosis and some of the streptothricoses, the scalpel (certainly in the earlier stages of the disease) has no place until iodin has been tried. How well I recall that, as a resident, I assisted my chief to excise a "sarcoma" of the thigh; only when the clean wound declined to heal, and iodids were successfully resorted to, were we disillusioned. The patient had syphilis.

Streptothricoses.—To be a little more specific, I should say that in the deep streptothricoses, including actinomycosis, surgical treatment has in general proved unsatisfactory. Exceptions, it is true, there are. Iglick of Orland, California, has reported such success with you, but it was in a scalp case; that is, superficial as the surgeon views it. The experiences of Ophüls, Woolsey, Pritchard, Black, Rinkenberger, Caglieri, Frick, Loiseaux, all Californians, find place in Sanford's and Voelker's[3] exhaustive compilation on actinomycosis. Of these, Caglieri's patient was operated upon and died, one of Black's refused operation and recovered (the follow-up notes are not supplied of his second case), and Iglick's patient was cured with potassium iodid. True, Iglick's was

a scalp case; and Ruhrah notes that cutaneous forms are decidedly hopeful as to prognosis. Ophüls' five cases had only a postmortem significance, but were valuable in indicating one of the factors concerned in inducing pulmonary gangrene. His organisms were not the conventional ray fungi but their first cousins, the streptothrices.

On the other hand, dermatologic experience is replete with examples of success where large doses of iodid (upward of 480 grains in twenty-four hours) has been accompanied by radiation. It appears that the combination of these two agents is necessary for consistent and optimum results. In streptothricosis (that is, where the organism concerned belongs to the threads, like actinomyces, but in which the ray arrangement does not take place) the same considerations obtain. In these latter we have, however, a much smaller group of materials from which to make deductions; the technical mycological study of these microörganisms has not been undertaken as fully as it should. Groupings cannot be made, and therefore no generalizations.

Incidentally, the concretions of the lachrymal duct which are commonly indexed as due to actinomyces, are not due to a ray fungus but simply to tangled threads of a streptothrix (*Actinomyces foersteri*).[4] The organism is not a true pathogen, but produces disease only by its mechanical effects. The calcification is a secondary development.

Blastomycosis.—This is not essentially a surgical disease therapeutically. In the cases which have escaped recognition for many years and where extensive destruction of tissue has taken place, of course surgical corrections are indicated. In the early stages, however, iodids have the outstanding preference. The only exception to this rule that I know is a unique case where the organism assumed unseemly acute infective and invasive propensities and rapidly metastasized from the hand along the lymphatics into the axillary nodes. In this case the prompt and complete excision of the primary focus was performed solely for the purpose of eliminating the major reservoir of dissemination in the case. Intensive conjoined iodid and x-ray treatment resulted in a complete and apparently permanent cure.

Deep Torula Infection.—From the practical standpoint, this at present concerns mostly the meninges and brain. Here, obviously, iodin medication and x-ray are indicated, inasmuch as the disease is a widespread, diffuse one, and so located as to be impossible of surgical eradication.

Yeast infection of bone extends back to Busse's[5] original classic of 1895. Since then, Brewer and Wood,[6] as well as Connor,[7] have reported cases in the American literature. I have had personal experience with cultures from pus from a case of osteomyelitis in the tibia of a child (Buzby's case).[8] Channel operation and iodides resulted in complete cure.

In the genito-urinary tract we know of but few reports of yeast infection. This is rather surprising in view of the predilection which yeast infection has for the kidneys of experimental animals. Perhaps they are overlooked.

Sporotrichosis.—As in the case of blastomycosis, this should concern the surgeon operatively only when the disease has progressed far, has been neglected, and destroyed tissue to the extent that trimming up becomes necessary. Generalized cases of this disease are of course widely known. Even in those cases where operative procedures are in order, it goes without saying that iodids should be conjoined.

In the eye, sporotrichosis should not be forgotten; a localization over the lachrymal duct should provoke thought toward sporotrichosis. The Giffords[9] of Omaha have done us real service in this connection. It is obvious what a boon iodid therapy is in a situation like this.

Coccidioidal Granuloma.—This is your field, and I cannot bring anything to you in re surgery. From what I have heard, the newer copper and antimonial therapy is only promising in the early cases or in cases like Guy and Jacobs,[10] where the organism is of attenuated virulence. After that I take it that the operative treatment is of the same order as that for tuberculosis.

Under the "miscellaneous" heading I shall have nothing to say about the surgical aspects because the cases are quite too scattering etiologically to justify general remarks. In general, the diseases under this heading have the general characters of tuberculosis or syphilis, with gummas or gummatous ulcers picturing their low, indolent course, but caused by a wide variety of fungi (hormodendrum, mucor, cephalosporium, and so forth). They will be discussed in greater detail in the section on laboratory diagnosis.

Summary.—As the problem of the surgeon mycosis introduces itself first in *differentially diagnosing* certain subacute gummatous and ulcerative states which are analogous to tuberculosis and syphilis. By and large, this problem is more calculated to be solved by the laboratory man than by the Simon-pure clinician. Even where the diagnosis clinically appears quite clear it is generally advisable to confirm it by the laboratory test; even sporotrichosis may be mimicked by tuberculous lymphangitis of the extremities. After diagnosis the problem of *therapeutics* presents, and here again those procedures which are accredited as surgical are only applicable in selected instances. The experience of the dermatologist in the technique of intensive (intravenous) iodid and iodin medication, the application of x-rays, the administration of colloidal copper, antimony, and so forth, should be taken advantage of. After that there will still remain numerous instances where the life-saving skill, or at least the life-prolonging skill, of the surgeon must be gladly utilized.

LABORATORY DIAGNOSIS

The concern of the surgeon in the diagnosis of the mycoses will not stop at this point. Not

that he would, should, or could, busy as he is with his own specialty, master all angles of a complicated subject like mycology. He would do well, however, to have a general perspective of the scope and limitations of the laboratory diagnosis of the mycoses. Thus, I have already, in another place (11), indicated that pathologists, by and large, concede that they are woefully remiss in their mycological training. At once I would hurry to point out that this is no fault of theirs, but in the final analysis is due to the comparative infrequency with which calls for mycological examinations are made. That is, in routine laboratory work the bacteriologic and histologic aspects, and so forth, far overshadow the mycologic ones. It thus becomes physically impossible for the average pathologist to be expert also in the rarely trodden mycologic field. In California you are much better off than in other parts of the United States because the mycoses bulk much larger in your problems and your pathologists have learned to adapt themselves to at least certain needs; their average for mycologic efficiency rates much higher, I am sure, than elsewhere in the United States. As I see it, the solution lies not in requiring every pathologist to become proficient in all of the minutiae of mycological biology and diagnosis, but to create at least a few mycological centers geographically placed throughout the United States; an expert mycologist being located in each and having facilities to check up on the problems which are too much for the general pathologist at large.

After this the surgeon will readily see that he should have his ear constantly to the ground as to the mycologic qualifications of an otherwise perfectly efficient pathologist.

And then there is the contre coup. What is just as important, he may be glad to save himself some chagrin in respect to the tissue samples which he forwards (or does not forward) to the pathologist. Let me first beg for more and yet more *biopsies*. The procedure is so simple, so safe, and in many cases so illuminating and unequivocal that it ought never to be omitted in a section like California as long as the slightest doubt remains as to the diagnosis of a gumma-like ulcer. Even though the Wassermann reaction be positive, and even though the tubercle bacillus be demonstrated in smears, I feel that it is still incumbent, if not more than as a measure of California patriotism, to at the very least inquire for coccidioidal granuloma. You must determine whether these diseases are associated and whether it is this which is confusing you. The situation is much simpler than with the histologic diagnosis of/between tuberculosis and syphilis; you are fortunate in that coccidioides, in the present state of our knowledge, is invariably to be found if present, and is so large that it can scarcely be overlooked.

Likewise let me beg of you to request a larger number of *autopsies*. No doubt you are surfeited by now with this appeal—it has become tiresome, but I would call your attention to an additional consideration in California that does not obtain elsewhere, that is, the magnitude and the menace of your coccidioidal problem; apart from the humanitarian aspect, what it means to your public health and this in turn to your economics. Is it the Mediterranean fruit-fly of your public health? I need but mention man-power, industry, labor problems, state appropriations for hospitals, sanitoria, and poorhouses to conjure up for you the ramifications of an endemic disease of the gravity of coccidioidal granuloma. You have made a worthy step in already making the disease reportable, and now, by correlating the morbid anatomical findings with the different systems of treatment employed; by detecting different grades of virulence in the different strains of microorganisms as shown by effects upon the viscera; by checking up on the question of an associated tuberculosis, syphilis, etc.—only by this order of attention and effort can the necessary funds of information be secured which in the aggregate will enable you to approach your problems on a secure foundation and after that with 100 per cent efficiency. Furthermore, as every investigator knows, some of the most worthwhile findings are those which develop only incidentally, as side lines in connection with work which was planned in quite a different direction. No one knows, when embarking upon an autopsy program, just what findings are quite unexpectedly going to be thrust upon him. Play the game with the pathologist; do not let him go it alone!

MYCOLOGIC TECHNIQUE

To the pathologist directly I cannot deliver a message except as conditioned, that is, expeditiously. Therefore I am confining myself to a table of amplified aphorisms, if you will, in re technique. This has been arranged on the basis that he is better acquainted with bacteriological technique than I am and that therefore I can place my materials before him most efficiently by beginning where bacteriology leaves off and thereafter indicating certain respects in which mycological technique differs from the bacteriological.

Use of NaOH in Direct Preparations.—NaOH (10 to 30 per cent) induces a difference in refractive index between fungus substance and the surrounding medium; this, in conjunction with the comparative grossness of fungus structures, has a use in mycology which it does not have in bacteriology. Except when extremely delicate fungi are to be expected like the streptothrices, it should never be omitted in immediate direct examination "in the wet" of pus, scrapings, tissue—in fact, any samples of material. The cutaneous fungi—blastomyces, coccidoides—indeed even the fine threads of *Microsporon minutissimum* may be readily identified thus. As far as I know, the sporotrichums resemble the nuclear fragments of leukocytes to such an extent that the diagnosis of sporotrichosis in direct prepa-

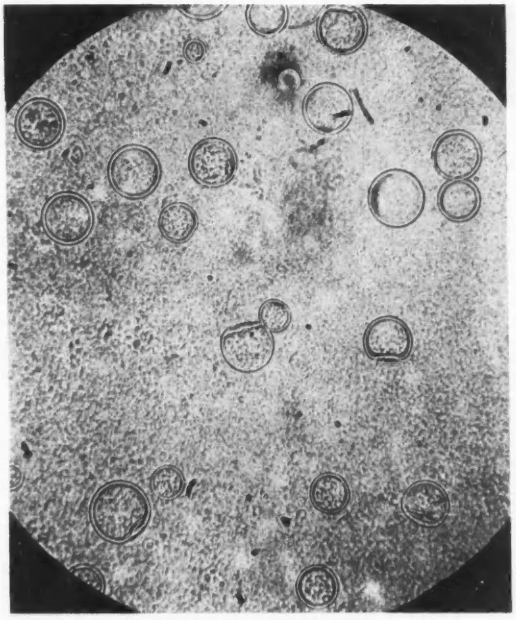

Fig. 1.—Effect of NaOH (10 per cent) in clearing pus preparation from experimental coccidioidal granuloma in guinea pig. Example of pseudo budding near center of illustration; actually it is but a matter of propinquity, referable to association of the two as originating in a common "ascus."

rations is not practical. Cultures have to be depended upon.

Staining Methods.—These have limited place, certainly as compared to bacteriology, because fixation by heat is calculated to distort a larger mass of material such as obtains in many fungus structures. In the event that it is felt that finer details of structure must be realized, such as cannot be secured short of staining technique, fixation should be performed by "wet" techniques such as are used in protozoölogy. To be sure, some sort of results may be secured by ordinary bacteriologic methods or indeed sometimes good results will more or less fortuitously occur, but to secure optimum and consistent results day in and day out it is felt that the foregoing modes of procedure will be of advantage.

Staining "In the Wet."—To avoid distortions incident to dry fixation (particularly with large yeast cells) most materials may be stirred into a small drop of undiluted Giemsa stain[12] and examined directly under the coverslip in this medium. The glycerin content effects a certain clarifying influence, but of course lacks the softening qualities of NaOH which are so desirable when examining tough materials like keratin. After about fifteen minutes, staining will have developed; accelerated by exerting pressure on the coverslip, as by tapping. Thereafter, grades of differentiation may be induced at the discretion of the observer by flushing distilled water from one side of the coverslip to the other.

India Ink Technique.[13]—This, performed in the wet, is a modification of the well-known Burri technique. Its justification is in demonstrating otherwise invisible or difficult to stain accumulations around (particularly yeast) cells such as are present in gloea formation. Yeast cells in fluid medium are the formations particularly susceptible to this technique, although other circumstances might arise for its employment. It is restful to the eye in prolonged observations.

Permanent Staining.—None of the preceding are suitable for permanent staining. As a matter of fact, whereas a wide range of dyes will stain the internal structures of the fungus cell, there are none which satisfactorily bring out the fungi-cellulose wall externally. Thus far I have found osmic acid the most serviceable; it stains fungi-cellulose faint brown. Of course, a counterstain may be superadded if it is desired to bring out internal structures yet farther. We critically need a *specific* stain for fungicellulose; from the fact that its composition is prone to vary *in vivo* with its environment, it is quite possible that by preliminary treatment *in vivo* with substances such as iron, such a specific stain might be developed.

Sabouraud's Medium.—This is a thing of the past—at least as originally postulated. Professor Sabouraud has personally communicated to me that he no longer uses crude maltose. The originally recommended Chanut brand is no longer on the market; indeed, Sabouraud has recently recommended honey as a substitute.[14] From work in my laboratory,[15] I feel that crude American glucose is an efficient substitute. Particular pains must be taken, however, as to the brand of peptone employed. The originally recommended

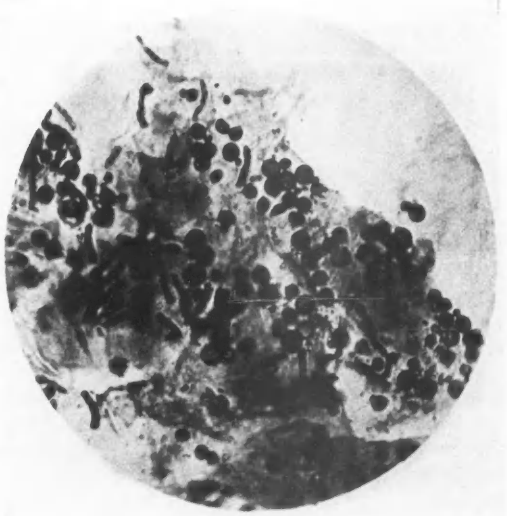

Fig. 2.—Scrapings from tinea versicolor to illustrate possibilities of staining "in the wet" by Giemsa. Both Microsporon furfur and bacteria are brought out in this material.

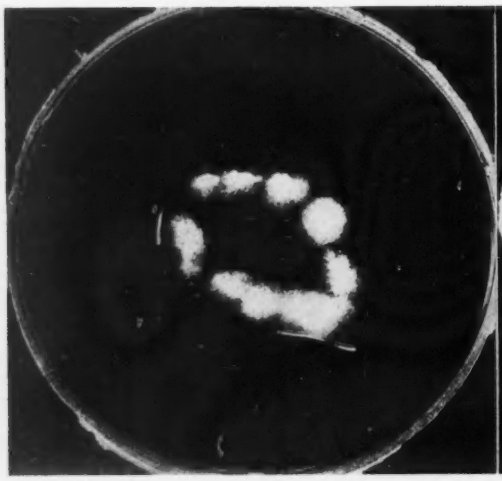

Fig. 3.—Employment of gentian violet medium in securing pure cultures.

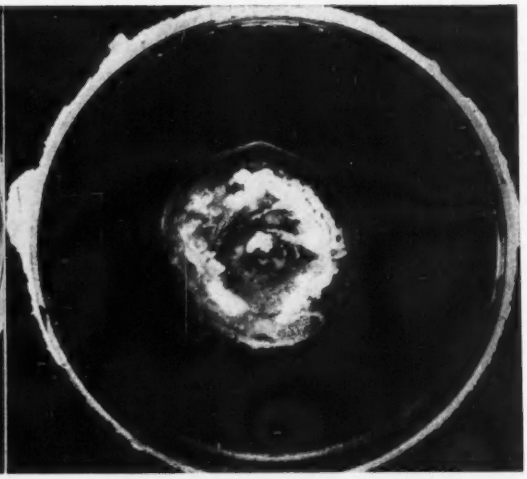

Fig. 4.—Same materials as in Fig. 3, but without gentian violet.

Chassaing is still available* and should be adhered to where it is proposed to faithfully elicit the standard gross cultural characteristics.

Fungi, considered by and large, develop well at such a low PH as the 4.6 of Sabouraud's medium, besides at the 7.1 < > of bacteriologic media. This low PH is automatically taken care of by the employment of Chassaing's peptone. It is of course particularly well known that carbohydrate (glucose) promotes luxuriance of growth in this class of plants. The advantage of luxuriance (but only provided it takes place under perfectly standard conditions) lies in the fact that thereby a particular conformation will be induced in the colonies, the different configurations being contingent upon the different permutations and combinations of factors like luxuriance, texture, moistness, production of conidia (powderiness), coarseness of hyphae, and so forth. Glucose is also calculated to bring out a pink (or other) color in colonies which otherwise may be latent.[16]

It should be distinctly understood that the rank and file of fungi will also grow on standard bacteriologic media and that the function of the glucose in mould mediums is in the direction of inducing gross *characteristics*. Indeed, glucose-free medium has some advantages (prevention of pleomorphism) for carrying along cultures in the laboratory.

Securing Pure Culture.—The low PH previously mentioned eliminates a large number of contaminating bacteria; however, additional helpmeets may be secured in special cases where it is found that this does not suffice. Inasmuch as both the hyphomycetes and the yeasts withstand gentian violet in concentrations of from 1:100,000 up to 1:2000, this agent may be employed as a restrainer, at least for the Gram-positive bacteria. A preliminary "drying out" of materials like pus over a period of two to three days does not vitiate some fungi, but will destroy many bacteria. This experience has been known to be very valuable in isolating blastomyces and sporotrichum. It is to advantage to crush coarser particles of fungus substances like the grains of Madura foot and actinomyces before planting.

Repeated examinations are often necessary before finally securing a positive result. Only by a realization of this peculiarity, or better by experience, will the laboratory man bring the full complement of mycotic cases to light. This holds good not alone in superficial dermatoses but also in blastomycosis and sporotrichosis. Positive cultures, however, fortunately for you, are rather regularly obtained in coccidioidal cases.

Direct Examination of Culture Tubes on the Microscope Stage.—Advantage should be taken of the grossness of fungus structures by resort-

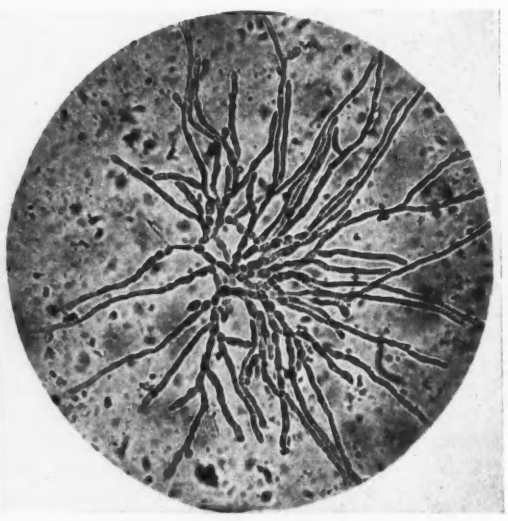

Fig. 5.—Hanging drop preparation of Sporotrichum councilmanii about five years old.

* Dolbey and Company, 3627 Woodland Avenue, Philadelphia, Pennsylvania.

ing to this method. By selecting thinner positions, like the uppermost, drier portions of the medium, and at its margins, the finer details of architecture may be readily determined as the fungus extends more or less out onto the walls of the tube. Of course only such information as will be secured by low powers of the microscope is available in this way. Advantage may be taken of this maneuver to detect the earlier stages of growth of sporotrichum, planting material immediately at the edge of the substrate. Under these circumstances, one can recognize germinating fungus cells, when present, within from twenty-four to forty-eight hours. This does not, of course, suffice to determine the species, but indicates, when present, that fungi are present in the materials, and this information taken into consideration with the clinical circumstances may be sufficient to justify prompt embarkation upon antifungus treatment.

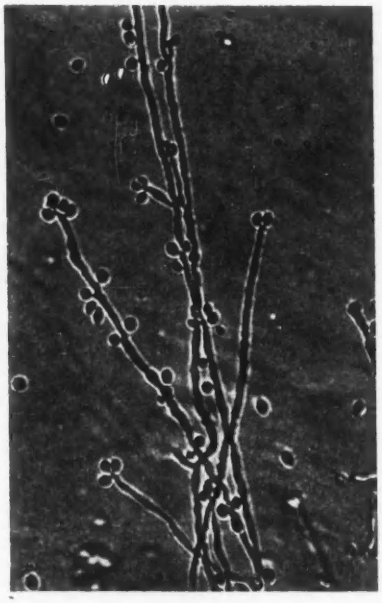

Fig. 6.—Illustrating how delicate the attachments of conidia are to hyphae in Sporotrichum schenckl. Since the grouping and arrangement of such conidia are essential to determination of the genus, the superiority of hanging drops over standard bacteriologic smears is obvious.

Hanging Drop.—Due to the complex architecture of fungus colonies as compared to bacteria, information is gained in the hanging drop as it is not for the bacteria. The particular grouping of spores along hyphae, spiral formations of hyphae, modes and frequency of branching, and so forth, are not distinguishable in ordinary smear preparations because the formations are likely to become disarranged. Due to the bulkiness of the fungus colonies and the necessity for a certain amount of oxygen the chamber of van Tieghem is the choice. In using it, sufficient time should be allowed for the full development of all the differential "organes" that may be expected to develop—on the average, three weeks. It is difficult to secure *permanent* preparations of the latter without disarranging the more or less delicate attachments and arrangements of spores, etc. In my experience, the closest maintenance is secured by fixing in *vapors* of osmic acid, succeeded by hardening in *vapors* of alcohol. After this, the preparation may be allowed to evaporate just short of dryness, and mounted in Farrant's medium.

Clearing Agents.—Inasmuch as some of the fungi, as for instance those in Madura foot, are deeply pigmented, certain details may be difficult to make out microscopically. Sometimes potassium hydroxid will correct—is sufficient for clearing; if not, a proprietary, diaphonal,* at once bleaches and clears the preparation in a remarkable way. It acts too energetically (overclears) for routine fungus work, but for extremely thick material and deeply pigmented ones it is quite serviceable.

Iodids and Bromids in the Urine.—Inasmuch as these halogens may induce fungating, ulcerating granulomas of the skin, the pathologist should be prepared to bring the urinary data into service. The starch test for the former I scarcely need mention; for bromin, the Wile-Belote[17] technique, employing fluorescin paper, should be taken advantage of. To five cubic centimeters of urine add a few crystals of potassium permanganate followed by one cubic centimeter of concentrated sulphuric acid. Test fumes of free bromin by filter paper strips dipped in fluorescin solution (change from faint yellow to pink).

Torula in Spinal Fluid.—In view of the occasional rôle played by this class of microörganism, the fact that they have been mistaken at first for red blood cells[18] and the fact that the possibili-

* Leitz, Inc. New York City.

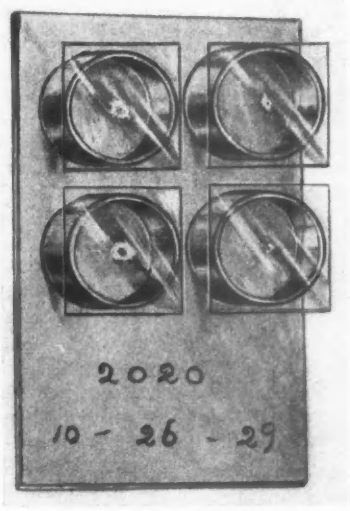

Fig. 7.—The van Tieghem cell. Units united and hermetically sealed with vaselin. Plantings are routinely made in quadruplicate in this laboratory.

ties of cerebrospinal treatment with iodid has not been exhausted, the routine inquiry for yeast in (selected cases of) clinically tuberculous meningitis appears advisable. This is all the more so in view of the absolutely black prognosis in this form of meningitis.

Leishman-Donovan Bodies.—As close as California is to Mexico, and with her flourishing coastwise commerce, I take it that routine preparations for Leishman-Donovan bodies should be made at least until the California profession has become thoroughly oriented as to the status of leishmaniasis here. With the Brazilians,[19] leishmaniasis is an outstanding differential diagnostic problem in connection with blastomycosis and coccidioidal granuloma.

Actinomycosis.—I have learned by bitter experience that other microörganisms than actinomycosis may produce radiating and more or less concentrically zoned colonies of large size which closely mimic ray fungi. Davis [20] has rendered us a service in calling attention to these actinomyces-like granules in the tonsil. They are in no way related to true actinomyces and consist of bacilli, streptococci, and spirilla. They are not pathogenic. On the other hand, it will be recalled that true actinomyces are to be found in the tonsils of the hog.[21]

The actinobacillus [22] of the veterinarian should be recalled when inquiring acutely into actinomyceslike granules. In every case the granules should be stained in tissue by Gram to determine whether there are streptothrix filaments in its interior; such must be invariably present in true actinomycosis. The roentgenologist will not be surprised when I remind that Sanford (loc cit) was not able to find a case on record at the Mayo Clinic (which is in an actinomycosis hotbed) where the bone was involved; this is in striking contrast to the lower animals, where osseous hyperplasia is such a conspicuous feature.

Madura Foot.—I only mention this to bring up the subject of the taxonomic determination of the rare and unusual species, genera, or even families of fungi which are calculated to be met in that affection. I have just determined, for instance, what appears to be *Scedosporum sclerotiale* in a case originating in Alabama.[23] Determinations of this sort, which are off the beaten path, are tremendous strains upon the time of the pathologist. The plant pathologist, on the other hand, is thoroughly familiar with such higher forms, and in a comprehensive plan for mycological centers such an individual should find place as a consultant on the staff. He is calculated not alone to help the pathologist play fair with himself, but to bring much in the way of technique and the most recent developments in fungous biology to the service of medical mycology.

Miscellaneous Fungi.—This paragraph finds place only to round out the list of deep mycoses. Apart from actinomyces, coccidioides, and so forth, already discussed, there are dozens of other species which have been reported as more or less isolated examples of reputed pathogens (mucor, penicillium, cephalothecium, glenospora, hormodendrum, hemispora, acladium, acremoniella, enantiothamnus, etc.). They have occurred in ulcers or "gummo ulcers." Naturally, insufficient data have accumulated to permit any generalizations being made; the concern of the pathologist at present is in identifying the species and recording it as fully as possible for future use in collecting and analyzing such cases.

Animal Inoculation.—Discretion must be exercised in selecting the laboratory animal. For sporotrichosis the rat is of choice, for blastomycosis the mouse and rat, while for coccidioidal granuloma the guinea pig is quite susceptible. In view of the extreme insusceptibility of rabbits to sporotrichosis and blastomycosis, it is probable that for each fungus a standard curve of pathogenicity could be constructed as reckoned upon the different laboratory animals. This would be of service in evaluating the virulence of different strains of coccidioides, etc., and I believe should be among the earlier items to be established in research on coccidioidal granuloma. The dog has not been sufficiently employed, and should not be omitted when anything like comprehensiveness is aimed at. It has been found most useful in immunologic work on aspergillosis.[24]

Immunology.—Advances have not taken place in this field to the extent that they have in the bacteriological because bacteriology ought to, always has, and always will overshadow mycology. An equally weighty reason has been a notorious lack of specificity, most striking in the skin tests but also obtaining in the complement fixation ones. The agglutination tests for sporotrichosis, indeed, have until very recently stood rather alone in diagnostic value. At all of the others severe and well-deserved criticism has been leveled.[24] The probability is that the antigens have not been sufficiently fractionated and that what fractions are obtained are group ones largely referable to fungicellulose more or less *per se*. It is notoriously discomfiting that the tuberculin test is positive in even some of the superficial mycoses, to say nothing of the deeper ones, and vice versa. In re coccidioidal granuloma, the recent publications of Jacobson [25] and of de Fonseca [26] are distinctly encouraging; all that is needed is confirmation of their results.

Mycologic Centers.—I have already hinted at the very special position which mycology occupies in medical biology. Perhaps in the preceding paragraphs this has been exemplified. After this it goes without saying that the Pacific Coast is beyond question one of the regions which should be represented by a mycologic center; geographically, economically, and now opportunistically, it deserves this advantage. A stock culture collection of fungi is maintained, it is true, in Chicago,*

* American Type Culture Collection, John McCormick Institute for Infectious Diseases, 637 South Wood Street, Chicago, Illinois.

but that is only a part of a large whole. As stated elsewhere, it is too much to expect that pathologists become thoroughly versed in the intricacies of mycology; indeed, it is quite unnecessary. Such a center should have, however, at least one mycologic expert as departmental head, with one or two assistants and appropriate technical personnel as a beginning. To finance such a center I have only to cite the "Golden State"; the ability and materials which you have here are unsurpassed anywhere in the United States.

As we conclude, and look backward over the path we have traveled this morning, let us do it California-wise. Perhaps there are three eminences that dominate the landscape: first, the grumbling volcano "coccidioidal granuloma"; secondly, the butte "clinical"; and thirdly, the potentially commanding peak of all—laboratory examination." Equip the last, now, as a mycologic center and thereupon with the assistance of "butte clinical" you become dynamically commanding. Advances you are bound to make against coccidioidal granuloma and the other deep mycoses, if by no more than sheer effort, with your present forces; they will work much more efficiently, however, with the reinforcements added from a mycologic center.

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PULMONARY HEMORRHAGE*

AN INVESTIGATION OF THE EXCITING FACTORS IN TUBERCULOUS HEMOPTYSIS

Clinical Prize Paper of the Fifty-Ninth Annual Session of the California Medical Association

By EMIL BOGEN, M. D.
Los Angeles

INTRODUCTION

PULMONARY hemorrhage is one of the most fearful and most frequent of the complications of pulmonary tuberculosis. According to Osler more than half of the patients with this disease suffer from some degree of pulmonary hemorrhage during the course of their illness. Since tuberculosis is responsible for nearly one-tenth of the average annual death rate, every twentieth person in this country suffers from hemoptysis from this cause at least once during his lifetime. It may appear as the first symptom in a person in whom the existence of tuberculous infection has never even been suspected, or it may occur as the last fatal event in a long-drawn-out struggle with chronic fibroid phthisis. Nevertheless, in spite of valuable work that has been done in the clinical, pathological and experimental investigation of this phenomenon, pulmonary hemorrhage remains today nearly the mystery to the physician that it presents to the layman.

Pulmonary hemorrhage usually appears in the course of an advancing tuberculous process in the lungs, but why it appears when it does and under the conditions that usually prevail at that time is little understood. It is not a necessary consequence of the destructive lesion, since the tubercu-

* From the Olive View Sanatorium of Los Angeles County.

* This paper was submitted under the nom de plume "Philo" and was awarded the Clinical Prize of $150 at the fifty-ninth annual session of the California Medical Association, April 28 to May 1, 1930. This being a paper for which a prize was awarded by the Association, it is published in its entirety. Graphic charts of tables will be appended to the reprints.

lous process is commonly preceded by thrombosis of the blood vessels before the tissue necrosis occurs. Thus it has even been observed that hemorrhage is even less likely to arise from an acute rapidly progressive type of disease than in the chronic fibroid cases. Perhaps some other exciting factor, in addition to the tubercle bacillus, is necessary to produce this manifestation. It is in the hope of elucidating some of the varied aspects of this problem that the present study has been undertaken.

FREQUENCY OF HEMOPTYSIS

During the past two and a half years, since May 15, 1927, careful record has been kept at the Olive View Sanatorium of Los Angeles County, of all pulmonary hemorrhages which have occurred among the patients there.* More than three thousand such hemorrhages have been so reported, arising among three hundred and thirty-three patients, or about 15 per cent of the more than two thousand patients who have been cared for in the institution for the whole or part of that time. This is somewhat lower than has been reported elsewhere, but these patients have been under strict sanatorium regime, and many more of them had had hemorrhages before admission to the institution. As has been previously noted, tuberculous pulmonary hemorrhages are not uniformly distributed in time, but exhibit a marked tendency to occur in groups. An analysis of this periodicity may, perhaps, lead to a better understanding of the responsible factors.

TABLE 1.—*Hourly Incidence of Hemoptyses*

Hours	A. M.	P. M.	
12 - 1	82	102	
1 - 2	118	80	
2 - 3	98	78	
3 - 4	88	125	
4 - 5	87	110	
5 - 6	149	120	
6 - 7	252	138	
7 - 8	214	164	
8 - 9	137	127	
9 - 10	85	88	
10 - 11	83	96	
11 - 12	89	91	
Total	1482	1319	2801
No record			315
Total			3116

TABLE 2.—*Daily Incidence of Hemoptyses*

Day	Total	Average
Sunday	447	3.27
Monday	446	3.26
Tuesday	461	3.36
Wednesday	441	3.22
Thursday	426	3.11
Friday	439	3.21
Saturday	456	3.33
Total	3116	3.25

TABLE 3.—*Monthly Incidence of Hemoptyses*

Month	1927	1928	1929	Average	
January	.....	74	46	60	
February	.....	103	24	63	
March	.....	135	45	90	
April	.....	112	111	111	
May	23	88	98	78	
June	152	67	95	98	
July	125	109	107	114	
August	80	99	45	75	
September	145	143	64	117	
October	180	140	52	124	
November	152	130	107	129	
December	69	102	56	89	
Total	964	1302	850	99	(3116)

* The name of the institution and other identifying references were lacking in the manuscript, but have been inserted by the editor.

DIURNAL VARIATION

The time of day at which the pulmonary hemorrhages occurred was obtained in about twenty-eight hundred instances, and tabulated according to the number of hemorrhages occurring in each hour. This showed a maximum during the hour six to seven in the morning, and another smaller peak from seven to eight in the evening. The morning peak shows three times as many hemorrhages during this one hour as during any hour of the night, and suggests that there must be some simple explanation for this preponderance.

The coughing that ensues when the patients arise from their sleep, in the effort to expel the secretions which had accumulated in the lungs during the night not only involves a considerable amount of movement of the lungs and other structures, with sudden marked changes in intrapulmonary pressures and stresses, but also increases the blood pressure, both in the systemic and the pulmonary circulation. The increased activity at meal time, which occurs at 6 a. m., noon and 5 p. m., rather than any physiological effect of the ingestion of food, may account for the increased number of hemorrhages at these hours. The lowest number of hemorrhages appear during the periods, both day and night, when the wards are quiet and the patients are supposed to be at complete rest. The varying curve of vital functions during the day, the relationships to the curve of temperature, pulse, and blood pressure are in accord with such a view. The diurnal changes in the barometric pressure, with maxima occurring in the morning and evening, may be of real significance, since, as shall be shown later, the barometric pressure appears to bear a direct relationship to the incidence of pulmonary bleeding.

Careful study of the relative incidence of hemoptyses on the different days of the week showed no consistent variation, any difference being well within the chance distribution of this array of data. The fact that visiting days are Sunday and Wednesday had no evident effect on the resultant pulmonary state, as shown in this data.

ANNUAL VARIATION

The periodicity of pulmonary hemorrhage is brought out again, however, when we consider the distribution at different times of the year. There is a definite maximum in the autumn, when the number of hemorrhages per day may average twice that prevailing at the time of minimal bleeding, in the winter. The fact that these seasonal variations do not concur with those reported by other workers in different places must be con-

TABLE 4.—*Hourly Incidence of Deaths*

Hour	A. M.	P. M.	
12 - 1	40	33	
1 - 2	31	34	
2 - 3	35	45	
3 - 4	23	46	
4 - 5	37	42	
5 - 6	48	46	
6 - 7	46	37	
7 - 8	47	37	
8 - 9	46	33	
9 - 10	46	23	
10 - 11	43	34	
11 - 12	46	31	
Total	488	441	(929.)

TABLE 5.—*Daily Incidence of Deaths*

Day	Number
Sunday	86
Monday	78
Tuesday	77
Wednesday	70
Thursday	85
Friday	78
Saturday	81

Total, 555 deaths in 1096 days.

TABLE 6.—*Monthly Incidence of Deaths*

Month	1927	1928	1929	Average
January	17	16	16	16
February	14	18	19	17
March	23	13	12	16
April	22	17	17	18
May	11	15	15	14
June	18	17	15	17
July	17	14	9	13
August	10	21	14	15
September	15	16	11	14
October	15	17	12	15
November	21	12	14	16
December	12	7	22	14

Total, 555 deaths in 1096 days.

sidered in connection with the peculiar climatic conditions in this place. Thus the spring months, which have been stated to be accompanied by more hemorrhages in the East, are mild and equable in southern California, and lack the rigors of which other regions complain. The seasonal periodicity in the number of hemoptyses appears to be too great to represent merely a chance variation, and suggests a definite meteorological factor in the etiology of pulmonary hemorrhage. The various components concerned will be taken up in greater detail subsequently, but it may be noted that the autumn here is the period of the greatest variability of all of the meteorological factors in this vicinity, and it is, perhaps, the effort of the body to accommodate itself to these varying and abruptly changing states that induce the disturbance in physiological equilibrium resulting in hemorrhage.

VOLUME OF HEMOPTYSIS

The volume of the individual hemoptyses varied greatly, more than half of them being less than two ounces in bulk. It has been frequently stated that blood-streaked sputum and mere traces of blood should not be reckoned as of the same significance as a frank flow of blood, since fresh granulation tissue in the lung, tussive trauma, irritation of the postpharynx and larynx from hawking and spitting, etc., can produce these

TABLE 7.—*Amount of Hemoptyses*

Amount	Number	
Not specified	264	
Trace, streak or tinge	578	
"Slight" or "clot"	248	
Less than one ounce	365	1455
One ounce	495	
Two ounces	434	
Three ounces	245	
Four ounces	156	
Five to ten ounces	242	
More than ten ounces	89	1661
Total		3116

slight traces without denoting the actual rupture of a blood vessel, which is the cause of true tuberculous hemorrhage. The volume of nearly three thousand hemorrhages, as reported, indicates that more than a fourth of them were mere streaks, stains or slight blood clots, and that a third of them were measured as less than one ounce in volume. The 1661 hemorrhages of one ounce or more included only eighty-nine more than ten ounces, and only ten more than sixteen ounces, or one pint, the amount generally given for a blood transfusion.

PERIODICITY

For the purpose of this study, only those hemorrhages involving one ounce or more of blood have been analyzed further. This is thought to correspond to what is generally referred to by writers on pulmonary hemorrhage in phthisis, and should repay analysis better than the indiscriminate gathering of all reports including those of blood-spitting of doubtful or absent significance. The hemorrhages have been treated as units according to the nurses' reports, thus if the same patient was reported as having three large hemorrhages during the same day, it was listed as three separate hemorrhages. Analysis shows that the number of patients who have hemorrhages each day bears a close relationship to the total number of hemorrhages that occur.

There were 1661 hemorrhages of one ounce or more reported during the 960 days from May 15, 1927 to December 31, 1929, inclusive, or an average of 1.73 a day. Actually, however, there were no hemorrhages at all or more than a third of these days, so that the average number of hemorrhages occurring on the days on which any did take place was 2.66. More than one-third of the hemorrhages reported occurred on less than one-tenth of the days included in this study, and half of them on one-sixth. This brings out sharply the fact of the marked "periodicity" of pulmonary hemorrhage in tuberculosis, and suggests that there may be some extrinsic factors rather than mere chance to explain the marked irregularity in the incidence of this phenomenon.

Nothing has been found in the conduct and regime of the sanatorium which might influence this condition. The number of patients in the institution at any time has not varied by more than 10 per cent during most of the period studied. Moreover, at no time is there record of a large number of patients being admitted who began to bleed immediately after their arrival. The appearance of the curve of incidence, showing that the peaks are scattered throughout the entire time involved and not gathered at any one occasion, dispels the idea that there may be a single or a few coincidental accidental factors that may be responsible. The relationship to visiting hours and the excitement attendant

TABLE 8.—*Frequency of Hemorrhages Per Day*

Number of Hemorrhages per day	Number of days	Total Number of Hemorrhages
0	336	0
1	213	213
2	156	312
3	104	312
4	60	240
5	31	155
6	26	156
7	18	126
8	8	64
9	2	18
10	4	40
11	0	0
12	1	12
13	1	13
Total	960	1661

upon them, since visitors are admitted only twice a week at the Olive View Sanatorium, is discounted by the fact that there appears to be little difference between the number of hemorrhages on different days of the week.

CLIMATIC DATA

Patients, attendants, physicians, and others, have repeatedly asserted that particular climatic conditions are associated with these periods of increased hemoptysis. The descriptions given of such weather conditions are quite vague and inconsistent. Pottenger's suggestion of the "electricity in the air" and Browning's conclusion that changeability rather than any particular static factor in the weather must be blamed, are the most tangible statements that have been discovered. In view of these widespread impressions, therefore, and in view of the relationship that they might have to the long-urged climatic treatment for tuberculosis, it was deemed advisable to inquire more carefully into the relationship of the incidence of pulmonary hemorrhage with the various climatic factors actually encountered at this institution.

TEMPERATURE

In anticipation of the possibility of some such study, data had been accumulated for several years under the direction of Dr. W. H. Bucher, superintendent of the sanatorium. This included a continuous temperature tracing for the entire period, from which daily minimum and maximum temperature readings have been made; wet and dry bulb thermometer readings made daily, about the middle of the day, in an outdoor location protected from wind, sun, and rain, from which the relative humidity or moisture saturation of the atmosphere has been calculated by the use of appropriate tables; daily barometric pressure readings made with a mercury barometer about the same time of day; and wind velocity measurements, made with an anemometer, and the tracing examined daily for the greatest number of miles of wind blowing in any hour of the day or night. It is with this data that we are now concerned.

The maximum daily temperature at Olive View Sanatorium varies from about 45 to 116 degrees Fahrenheit, but it is not above 110 or below 60 degrees more than ten days in the year, and lies between 70 and 100 degrees more than two-thirds of the time. The daily range of temperature is generally around 30 degrees, never being more than 40 degrees and occasionally falling to as little as 10 degrees, especially in the winter time. In general, the greater is the maximum temperature the greater the daily variation, the minimum temperature never rising above 82 or falling lower than 40 degrees, true frost never appearing on the record of the past three years. Through the kindness of Mr. Bert Hanneman, these figures have been compared with the reports which he makes to the United States Weather Bureau from San Fernando, California, about four miles from the sanatorium. Although a few degrees difference in temperature often occurs between these two sets of figures, the general agreement, particularly in the direction and amount of change, is quite satisfactory.

Examination of the records for the maximum daily temperature, shows that the incidence of pulmonary hemorrhage is greatest on the days when the temperature is highest, and least when the temperature is around the theoretical optimum, about 70 degrees Fahrenheit, or perhaps when the temperature is lowest, since the differences here are inconsiderable. This accords with the fact that the least number of hemorrhages occur in the winter time here, as has been found also by Anders in Philadelphia, but not by some other writers; but the low summer figures show that it is the hot days of autumn, rather than those of summer, which are accompanied by bleeding from the lungs.

HUMIDITY

Popular impression credits increased humidity with a causal relationship in tuberculous hemoptysis, and patients are often warned to avoid fog or damp climates, or themselves complain of moist weather. The undoubted influence of moist weather conditions in rheumatic afflictions, however, may not be of equal importance in tuberculous hemoptysis. The lowest number of hemorrhages appeared to occur on the days of approximately optimum humidity, *i. e.*, between 50 and 60 per cent saturated, and both drier and moister days were associated with slightly higher figures. The differences are perhaps too small for any dogmatic conclusions, but suggest that the popular impression may have some basis but that it should be supplemented by recognition of the fact that deviations from the optimum of comfort in either direction may be associated with increased likelihood of pulmonary hemorrhage.

TABLE 9.—*Maximum Temperature and Hemorrhages*

Hemorrhages per day	Temperatures (degrees F.) 100	90-99	80-89	70-79	-69	No Record	Total Days
0	40	74	79	86	50	7	336
1	28	50	54	45	36	0	213
2	20	33	37	37	25	4	156
3	16	25	28	19	15	1	104
4	12	15	8	11	12	2	60
5	5	7	11	3	4	1	31
6	5	4	5	8	4	0	26
7	3	6	5	4	0	0	18
8	1	2	2	2	1	0	8
9	1	0	0	0	1	0	2
10	1	2	1	0	0	0	4
12	0	0	1	0	0	0	1
13	0	1	0	0	0	0	1
Total days....	132	219	231	215	148	15	960
Hemorrhages	267	401	402	327	240	24	1661
Average	2.03	1.83	1.74	1.57	1.62	1.6	1.73

TABLE 10.—*Humidity and Hemorrhages*

Hemorrhages per day	Per cent Humidity 70	60-69	50-59	40-49	30-39	-29	No Record	Total Days
0	21	35	39	79	63	71	28	336
1	12	19	26	50	41	45	20	213
2	9	15	14	46	32	31	9	156
3	7	13	4	33	25	11	11	104
4	8	5	7	13	10	12	5	60
5	3	4	0	9	6	3	6	31
6	1	0	3	4	7	7	4	26
7	0	3	1	5	5	2	2	18
8	1	3	0	1	0	2	1	8
9	0	0	0	0	1	1	0	2
10	0	1	0	1	1	1	0	4
12	0	0	1	0	0	0	0	1
13	0	1	0	0	0	0	0	1
Total days..	62	99	95	241	191	186	86	960
Hemorrhages....	112	196	131	415	346	294	167	1661
Average..	1.80	1.98	1.48	1.68	1.81	1.58	1.94	1.73

The figures for wind velocity are, unfortunately, quite fragmentary, observations being available for only about half of the days studied. These appear to indicate a beneficial effect of mild breezes, the number of hemorrhages being higher on days of excessive calm, and least when the wind ranged between eight and fourteen miles an hour.

TABLE 11.—*Maximum Wind Velocity and Hemorrhages*

Hemorrhages per day	Maximum Wind Velocity (In Miles) 0-3	4-7	8-14	15-	No record	Total
0	19	61	40	18	198	336
1	20	44	24	6	119	213
2	19	37	17	5	78	156
3	8	33	7	1	55	104
4	13	16	5	6	20	60
5	3	6	3	2	17	31
6	4	5	2	1	14	26
7	0	5	4	1	8	18
8	1	2	1	0	4	8
9	0	1	0	0	1	2
10	0	0	0	0	4	4
12	1	0	0	0	0	1
13	1	0	0	0	0	1
Total days	89	210	103	40	518	960
Hemorrhages	206	401	162	66	826	1661
Average	2.3	1.9	1.6	1.7	1.6	1.7

The results of these analyses of the temperature, humidity and wind velocity, therefore, appear to indicate that for each of these aspects of the weather there are optimum conditions under which the least number of hemorrhages may be expected to occur, but that marked variations from this optimum in any one of them, particularly in the direction of excessive heat or humidity, or absence of wind, are apt to be associated with an increase in the incidence of hemoptyses. It is important to note that we have been unable here to show any uniform relationship between these conditions themselves, except for the relatively greater frequency of hot, dry weather associated with strong winds.

BAROMETRIC PRESSURE

The relationship of barometric pressure to the incidence of pulmonary hemorrhage is of particular interest. It should be noted here that the popular impression that low barometric pressure heralds a rise in temperature, humidity and wind, and impending rain, is not true for conditions around Olive View; in fact, no constant or even predominant relationship between these weather components has been made out. Barometric pressure readings were usually made during the noon hour or in the early afternoon. The readings varied from 28.35 to 28.93 inches of mercury (735 to 720 millimeters), with an average of 28.65 inches (728 millimeters). Tabulation of the number of hemorrhages occurring on days of different barometric pressure reveals a striking relationship, more marked than any of the previous meteorological factors considered. Almost uniformly, the days with higher barometric pressure showed the greater number of hemorrhages, so that the days with the lowest barometric pressure had scarcely half as many hemorrhages as those on which the barometer rose the highest. Careful analysis of the data by statistical methods gave a positive coefficient of correlation of .11.

TABLE 12.—*Barometric Pressure and Hemorrhage (Same Day)*

Hemorrhages per day	Barometric Pressure Over 28 Inches -49	50-59	60-69	70-79	80-	No Record	Total
0	15	36	156	88	16	25	336
1	8	19	96	58	12	20	213
2	3	18	64	50	11	10	156
3	3	6	53	27	2	13	104
4	0	7	26	18	6	3	60
5	0	1	16	8	0	6	31
6	1	1	13	6	1	4	26
7	0	1	8	7	0	2	18
8	0	0	3	3	0	2	8
9	0	0	0	1	1	0	2
10	0	0	2	1	1	0	4
12	0	0	1	0	0	0	1
13	0	0	1	0	0	0	1
Total days	30	89	439	267	50	85	960
Hemorrhages	29	119	770	479	89	175	1661
Average	1.0	1.4	1.8	1.8	1.8	2.1	1.7

TABLE 13.—*Barometric Pressure Preceding Day and Hemorrhages*

Hemorrhages per day	Barometric Pressure Over 28 Inches -49	50-59	60-69	70-79	80-	No Record	Total
0	10	40	151	85	7	43	336
1	15	15	106	59	13	5	213
2	3	13	72	49	11	8	156
3	1	10	43	35	8	7	104
4	1	7	26	20	3	3	60
5	0	2	17	6	2	4	31
6	1	3	11	8	2	1	26
7	0	0	9	5	2	2	18
8	0	1	3	4	0	0	8
9	0	0	1	0	0	1	2
10	0	0	2	2	0	0	4
12	0	0	0	1	0	0	1
13	0	0	0	1	0	0	1
Total days	31	91	441	275	48	74	960
Hemorrhages	34	135	750	532	107	103	1661
Average	1.1	1.5	1.7	1.9	2.2	1.4	1.7

TABLE 14.—*Changes in Barometric Pressure and Hemorrhages*

Hemorrhages per day	Change in Barometric Pressure: Rise 15 to	10 to 14	5 to 9	4 to −4	Fall −5 to −9	−10 to −14	−15 to	No Record	Total
0	14	12	42	151	38	17	10	52	336
1	11	9	20	109	25	7	3	29	213
2	2	7	23	68	26	7	7	16	156
3	1	2	8	51	12	6	5	19	104
4	4	4	12	20	7	5	2	6	60
5	1	1	5	12	2	1	0	9	31
6	1	2	4	6	9	1	1	2	26
7	0	1	1	8	3	1	0	4	18
8	0	0	2	5	0	0	0	1	8
9	1	0	0	0	0	0	0	1	2
10	1	0	0	3	0	0	0	0	4
12	0	0	0	0	1	0	0	0	1
13	0	0	0	0	0	1	0	0	1
Total days	36	38	117	433	123	46	28	139	960
Hemorrhages	64	69	210	700	238	90	46	244	1661
Average	1.8	1.8	1.8	1.6	1.8	2.0	1.6	1.8	1.7

CLINICAL DATA

The 1661 frank hemorrhages of one ounce or more, together with the 1455 other instances of blood-spitting reported, came from 333 patients of whom 183 were men and 150 were women. This male preponderance, which is the more significant since the sanatorium accommodates 20 per cent more women than men, is in accord with previous observers. More than 90 per cent of these patients were diagnosed "Far advanced pulmonary tuberculosis" at the time of admission, only two per cent entering in an incipient stage. Nevertheless the mortality rate in this group was exceptionally high; more than 34 per cent of them are already dead, and the 40 per cent who are still in the sanatorium are generally in a poor condition. It is worthy of note that not only are there more men who have hemorrhages, but that the mortality among the men in this series was

TABLE 15.—*Results in Hemorrhage Cases*

	Males	Females	Total
Died during hemorrhage	10	2	12
Died within a week	12	6	18
Died later in sanatorium	47	26	73
Died after discharge	8	3	11
Discharged and living	40	48	88
Remaining in sanatorium	66	65	131
Total	183	150	333

almost twice as high as that of the women. It has been stated that the Mexicans are a less tuberculous people and are less susceptible to the forms of tuberculosis which produce hemorrhage, but nearly a third of the patients in this series were Mexican. The men were, on the average, somewhat older than the women, but in both sexes all ages were represented, with the exception of children under twelve.

TABLE 16.—*Age Distribution of Hemorrhage Cases*

	Males	Females	Total
Under 20	25	28	53
20-29	66	65	131
30-39	43	43	86
40-49	32	8	40
50-	17	5	22
Total	183	150	333

TABLE 17.—*Clinical Classification of Hemorrhage Cases*

Stage on Admission.	
Minimal	7
Moderately advanced	20
Far advanced	306
Total	333
Condition on Discharge.	
Arrested	14
Improved	41
Unimproved	42
Dead	103
Remaining in sanatorium	133

LABORATORY DATA

Laboratory examinations were positive for acid-fast bacilli in the sputum in 90 per cent of the cases examined, at some time during their sanatorium stay, emphasizing the extent of the pulmonary pathology in this group. The Wassermann or Kahn test was either positive or doubtful in over 12 per cent, as compared to only 4 per cent in all patients at present in the institution, suggesting that lues may be a contributory factor in some instances, either to the advancing pulmonary pathology or perhaps to the final vascular lesion.

The white blood count in the hemorrhage cases averaged 12,000, which is about the same as that of the other far advanced patients now at this sanatorium. This may suggest that secondary infections by the pyogenic organisms is probably not an important factor in the production of these hemorrhages. The hemoglobin in these patients averaged well over 75 per cent, which is definitely higher than the corresponding figure for the other patients in this sanatorium. A decrease in hemoglobin during their stay in the sanatorium, however, was more frequent in this group than in the other patients treated here. We may conclude, therefore, that anemia is not a contributory cause of pulmonary hemorrhage, in fact, that plethora or a high concentration of the blood may be a more culpable factor, but that hemorrhage does tend, to a slight extent at least, to produce anemia.

The sedimentation time, as measured by a modified Linzenmeier technique, was below normal in nearly every instance and was less than thirty minutes in more than half of the cases, but was not as low at the time of admission as that of the far advanced patients who later had no hemorrhage. In nearly half of them, however, it dropped to a shorter time during their hospital stay, as compared to the other patients in the sanatorium, two-thirds of whom show a rise. This again suggests that the patients who had hemorrhages have a poor prognosis as a result, since a drop in the sedimentation time is of definitely poor prognostic significance.

TABLE 18.—*Laboratory Findings on Admission of Hemorrhage Cases*

Sputum.	
Acid fast bacilli found	298
Acid fast bacilli not found	35
Wassermann Test.	
Positive or doubtful	41
Negative	292
White Blood Cell Count.	
Under 10 000 per cubic centimeter	88
10,000-14,000	165
Over 15,000	80
Hemoglobin, per cent (Dare).	
Over 80 per cent	126
70-79 per cent	146
Under 70 per cent	61
Sedimentation Time (Linzenmeier).	
Under 15 minutes	54
15-29	127
30-59	95
Over 1 hour	42
No record	15

The blood pressure, measured at the time of admission, was below normal in most of these patients but somewhat higher than the figures obtained from other far advanced cases now in the sanatorium. On the other hand, nearly 10 per cent of them had a systolic pressure above 130 millimeters of mercury, which is more than twice the incidence of this finding in our admissions in general, and in a number of instances a marked hypertension was present. This association of high blood pressure with pulmonary hemorrhage may well possess pathogenic significance. To this extent the hypotension accompanying far advanced pulmonary tuberculosis may be looked upon as a homeostatic or protective mechanism. The coagulation time of the blood appears to be, if anything, more rapid than normal in our tuberculous patients, and examinations of patients with hemoptysis has thus far failed to reveal a single instance of undue prolongation of the clotting time.

TABLE 19.—*Blood Pressure in Hemorrhage Cases*

	Males	Females	Total
Under 100 millimeters	18	20	38
100-110	41	33	74
110-120	38	28	66
120-130	19	10	29
130-	20	10	30
No record	47	49	96
Total	183	150	333

MENSTRUAL FACTORS

The relationship of pulmonary hemorrhage to menstruation has been noted by a number of

TABLE 20.—*Menstruation and Hemorrhages*

Data available for 36 patients

Before menses	11
During flow	13
Following week	1
Intervening 2 weeks	4
Menses absent	7

writers. The fact that hemorrhages are, on the whole, less frequent and less serious in women than in men suggests that the menstrual phenomena may be, not a cause of hemorrhage, but rather a protection against it. This might act either by lessening the total volume of blood, thus relieving a plethora that might otherwise lead to hemoptysis by lowering the blood pressure or the basal metabolic rate, with lessening of the respiratory movements, or by increased coagulability of the blood, such as results from any loss of blood. The position that the hemorrhages that do occur occupy with respect to the menstrual cycle is not often stated, quantitatively, although individual opinions have been confidently expressed. For this reason the women now in the sanatorium were interviewed by a woman physician and any recollections they had as to the relationship of their hemorrhages to the time of menstruation was carefully recorded.

Examination of these reports showed a very definite relationship. In only one case did hemorrhage follow the menstrual flow, and in only four did it occur during the intervening fortnight. More than 85 per cent of the women reported that hemorrhage came either during a period of amenorrhea, or preceding or accompanying the first few days of menstruation. In several instances the observation was made that hemorrhage was apt to come at the time of suppression of menses, the so-called vicarious menstruation. Whether the hemorrhages so occurring depend on changes in the coagulability of the blood, on the engorgement of the mucous membranes of the lungs similar to the observed engorgement of the nasal mucosa, or on some specific expression of the female sex hormone is not known. The studies on the physiological monthly cycle in women, showing that the blood pressure reaches its maximum just before the menstrual flow, dropping to a minimum soon after the flow ceases and gradually rising to the maximum again, however, brings this phenomenon also in consonance with the fact that all of the other conditions resulting in increased blood pressure seem to be accompanied by pulmonary hemorrhage, while those lowering the blood pressure appear to afford some protection against it.

USUAL TREATMENTS

The therapeutic management of a case of pulmonary hemorrhage and the prevention of its recurrence depends upon our understanding of the pathological processes involved and the factors influencing them. The widespread idea that there is a delay in the clotting time has given rise to the prevailing treatment of pulmonary hemorrhage by calcium, fibrinogen, and other means of accelerating coagulation. The administration of emetin, ergot, adrenalin, and other vasoconstrictors have also been recommended in the apparent hope of producing a vasoconstriction that will hasten the clotting process in the lungs, or lessen the relaxation of the vessels in the lung which may allow such transudation of blood as has been suggested by Otis. No support for any of these measures has been found in this study.

RATIONAL TREATMENT

More rational appears to be the use of vasodilators and depressants. Even though the blood pressure in these patients may not be as high as normal, relative lowering of the pressure may make for more easy clotting and retention of the clot. That transient increases in the blood pressure may play an etiological rôle in the causation of pulmonary hemorrhage is suggested by many facts. Hemorrhages following sudden or unusual exertion may be reported by any physician with experience with tuberculosis. The rôle of emotion, excitement and anxiety, all of which increase the blood pressure, have been noted many times. More tangible, perhaps, is the data showing that in the morning, when patients arise and the blood pressure rises from the low sleeping level to the higher waking one, the incidence of hemorrhages multiplies several times. The lowering of this incidence during the afternoon rest period, and its increase thereafter, also fits in with this explanation. It is highly probable that the effect of meteorological conditions on the frequency of hemoptysis may be found to act through this mechanism. All experimental evidence indicates that diminished barometric pressure lowers the blood pressure, and vice versa. It is possible that the diurnal barometric maxima have also their relationship to the daily fluctuations in the blood pressure. The greater incidence and severity of pulmonary hemorrhage in men, as compared to women, may be explained by the lower blood pressure in the latter group. The frequency with which hemorrhages when they do occur in women come just before or at the beginning of the menstrual period, when the blood pressure is highest, or during suppression of the menses, when it may also be expected to be unduly increased, may be attributed to the same agency.

PULMONARY APOPLEXY

A comparison may be made between pulmonary hemorrhage, or hemoptysis, and cerebral hemorrhage, or apoplexy. Both result from pathological conditions in the region of the vessels affected, such as arteriosclerosis in the cerebral vessels or tuberculosis in the lungs. In addition, both are precipitated by sudden and abrupt increases in the blood pressure, as from excitement, exertion, etc. The analogy is not yet complete, but the possibility should be borne in mind and may well repay further study.

It has not been possible at this time to take up all of the interesting angles to the clinical study of pulmonary hemorrhage. It is hoped, however, that the many relationships here shown or suggested may be further investigated so that we may better understand, and thus more successfully forfend, this intimidating visitation.

APPENDIX—COMMENT

Death Data.—At the same time that the study of hemoptyses was being conducted, data was

accumulated regarding the 929 deaths which have occurred here since the opening of the sanatorium of which 555 have taken place within the past three years. The hourly curve of death shows that, contrary to the popular impression, the majority of deaths from tuberculosis occur during the waking hours, the largest numbers occurring in the morning after arising, and in the afternoon after the rest period. The differences are not nearly so marked as in the case of the hemorrhages, however, and do not point so directly at some causative factor. Only twelve deaths have resulted immediately from a hemorrhage, and eighteen more within a week thereafter, during the past three years, and less than one-fourth of the patients dying here had hemorrhages while they were in the sanatorium.

The weekly fluctuation in the death rate from day to day is inconsequential, the apparently slightly lower figure for Wednesday having no clear significance. The seasonal variation in the death rate is surprisingly low, the average of fifteen deaths a month having been maintained for several years with only slight occasional variations. This is especially unexpected in view of the marked seasonal variation in the death rate from other respiratory infections.

Barometric Analysis.—It was suggested, however, that the barometric pressure effect might not be manifested at once, however, but only after a number of hours, and that, in any case, the hemorrhages occurring at the time of the peak, in the morning, were more likely to be influenced by the barometric pressure reading taken the day before than by one which was not taken until many hours later. The number of hemorrhages per day, therefore, were recalculated with reference to the barometric pressure existing on the previous day, and the data again analyzed. The value of this manipulation was at once evident.

The days when the barometric pressure rose to 28.8 inches or higher were followed by an average of 2.2 hemorrhages per day, while the days when it dropped to below 28.5 inches were followed by an average of only 1.1 hemorrhages per day. The intermediate figures show corresponding relationships. In other words, whenever the barometer is low we may expect few hemorrhages; whenever it is high, more on the succeeding day, and intermediate conditions yield intermediate numbers of hemorrhages. If we try to continue this process further still, however, and correlate the number of hemorrhages with the barometric pressure on the second preceding day, this relationship is lost and no connection between barometric pressure and hemorrhages appears.

Many previous workers have considered that the change and the direction in change of the barometric pressure, rather than the absolute values of the pressure existing, are of significance in the incidence of pulmonary hemorrhage, as has been stated by Browning and Pottenger. Our data lends but little support to this conception. The days with little or no change in the barometric pressure do seem to have somewhat fewer hemorrhages than those with more change in the barometer, but the difference is slight and there appears to be no significance at all as to whether the barometer is rising or sinking.

This unexpected phenomenon, that the incidence of pulmonary hemorrhage goes hand in hand with the height of the barometric pressure is the most definite and unambiguous finding in this investigation. It is unfortunate that the data from previous studies so far encountered has not been so presented as to make direct comparison possible. It is hoped that further attempts will be made to see if this apparent relationship holds in other places and at other times.

Olive View Sanatorium.

SAFETY MEASURES IN THE PRACTICE OF UROLOGY*

By CHARLES PIERRE MATHÉ, M. D.
San Francisco

IN recent years urology has made great strides and is considered today as the specialty in which diagnosis has reached a greater state of perfection than in any other branch of medicine. The development and perfection of the diagnostic and operative cystoscope has provided a method of precise examination and accurate treatment of diseases of the kidney, ureters, and bladder. The mortality attending all surgical interventions on the urinary tract has been greatly reduced. These advances have been due to complete supervision and treatment of urinary disorders by the highly trained specialist of the day—the urologist—who is able to diagnose any lesion of the urinary tract, to perform any operation on the urinary organs that is necessary, and to cope with any complication that might arise. In spite of the great perfection that our specialty enjoys, certain established procedures are continued which are harmful, sometimes even fatal to the patient, which seemingly are continued, not because of lack of safer methods or of condemnation voiced by individual urologists who have had embarrassing or fatal accidents, but by virtue of time-honored custom. It is the purpose of this address to review and condemn these dangerous procedures, substituting harmless and efficacious methods in their place.

LOCAL ANESTHESIA

In producing surface anesthesia of the urethra and bladder prior to instrumentation and cystoscopic investigation, cocain is still used. There is no doubt that it produces excellent analgesia, but it is dangerous, particularly in the aged, and when there are open bleeding or ulcerative surfaces in the urethra and bladder. Should it come in contact with an open surface, rapid absorption takes place, leading to grave symptoms and sometimes

* From the department of urology, Saint Mary's Hospital, San Francisco.
* Chairman's address, Urology Section, at the fifty-ninth annual session of the California Medical Association at Del Monte, April 28 to May 1, 1930.

death. Topical application of cocain (4 to 10 per cent) is equally dangerous, particularly when applied after instrumentation. Novocain (2 to 4 per cent), eucain, tutocain (1 per cent), procain or some other nontoxic analgesic substance should be substituted for cocain. These drugs may require a longer time to take effect, but if one waits ten to twenty minutes satisfactory anesthesia is obtained. I cannot too strongly condemn the injection or topical application of cocain in any strength in the urethra and bladder for the purpose of obtaining surface anesthesia.

PASSAGE OF SOUNDS

I cannot overemphasize gentleness in the passage of sounds. In patients presenting multiple strictures with the formation of pockets in the urethra, one should always use a filiform which attaches to the Béniqué or La Fort sound and guides it safely into the bladder. It prevents the tip of the sound from entering into a pocket, abrasing the mucosa, or forcing a false passage. In visiting the famous Clinique de Necker in Paris, one is impressed by the ease with which sounds are passed by the aid of the filiform, which screws onto the Béniqué double-curved sound. The use of quinin often prevents the urethral chill and fever that sometimes follows dilatation of the tight stricture. I recall a patient, the consul of one of the world powers, in San Francisco in whom the previous administration of one gram of quinin in divided doses invariably prevented subsequent attack of chill and fever. Although its use is empirical, it is efficacious in practice.

DANGERS ATTENDING CYSTOSCOPY AND PYELOGRAPHY

The great value of cystoscopy and pyelography has led to its universal employment by urologists. Its aid in diagnosis is unquestioned and the information obtained by its intelligent employment is of great benefit. Although an invaluable aid to diagnosis, cystoscopy is not without danger, and is sometimes followed by a rather severe reaction. It cannot be indiscriminately employed in all cases. Cystoscopy is particularly contraindicated in weak, debilitated patients, in the aged, and in those whose total renal function is low. Pyelography is also contraindicated in the type of cases mentioned above. In infection of the kidney it should not be employed during the acute stage. Although bilateral pyelography is well tolerated in the great majority of patients, its indiscriminate use is not without danger. Anuria followed by death has been observed to occur after bilateral injection of the kidney pelvis with the nontoxic opaque solutions now in vogue. Urologists experiencing accidents are very emphatic in condemning the injection of both pelves at the same sitting. There is no question that some of these reactions might have occurred following the simple passage of the ureteral catheter. On three occasions I have observed a severe reaction following the passage of the ureteral catheter, consisting of tetanic contractions of the muscles of the hands and feet, marked weakness, heart failure, and syncope. These reactions occurred in a patient suffering from a huge renal tumor with metastasis in the chest, in one presenting rather marked advanced bilateral hydronephrosis, and in one possessing a huge unilateral hydronephrosis. When this reaction occurs the catheters should be removed at once; the cystoscopic examination discontinued. In weak and debilitated patients and in those presenting considerable infection it is much safer to perform unilateral pyelography, examining each kidney at a different sitting.

CHOICE OF CATHETERS IN CATHETERIZATION OF THE BLADDER AND URETERS

In any modern hospital the greater proportion of catheterization of the female patient is performed by the student nurse. As we all know, the ordinary glass catheter is used. It is easily sterilized by boiling, can be repeatedly utilized and, because of its shape, is readily retained in place while evacuation and lavage of the bladder is made. Yet, it is not without danger. Recently at Saint Mary's Hospital in San Francisco, a patient was catheterized prior to an abdominal operation. The catheter had been previously cracked by striking metal instruments in the sterilizer. The crack was so minute that it was not observed by the nurse. When it was placed into the bladder the tip broke and lodged in this viscus and, although it was removed by the use of a Rongeur forceps through an operating cystoscope, the accident was the source of great consternation to the physician and hospital. After conferring with the hospital authorities, we substituted a specially devised metal for the glass catheter. It has the same shape and contains openings of greater size, assuring better drainage of particles of débris and mucus when evacuating or washing the bladder. This metal catheter is more durable and serviceable and cannot be broken. I recommend it to all hospitals for replacement of the glass catheter.

In catheterizing the ureters the silk and gum ureteral catheter has occasionally broken and has been retained in the ureter, giving rise to more or less grave complications. At the last meeting of this section at Coronado, Dr. William Stevens reported breaking the tip of a bulb catheter in the ureter while making routine dilatation. In discussing Doctor Stevens' paper, Doctor Birch of Sacramento reported a similar accident. One must not forget that the ureteral catheter is constructed of silk and gum. When the catheter becomes old slight forcing will cause the gum to crack, allowing urine and antiseptic solutions to come in contact with its interior, disintegrating the silk threads. Such a catheter can easily be broken, particularly if it is caught in a tight ureter or if it forms a loop within an enlarged ureter. The accident of breaking a catheter within the ureter can be avoided if catheters are inspected

and discarded when they are defective or have disintegrated with age. Furthermore, thorough lubrication with olive oil facilitates the introduction and withdrawal of the catheter.

DANGERS OF SODIUM HYDROXID IN THE CYSTOSCOPIC ROOM

In order to alkalinize the urine collected from the separate kidneys in performing the phenolsulphone-phthalein renal function test, sodium hydroxid 15 per cent was originally recommended by Gerathy and Roundtree and since has been more or less universally employed. It is a very strong caustic agent, and usually destroys that portion of the ureteral catheter that is allowed to come in contact with it. If by chance it should be injected into the kidneys or bladder, as it has been on some occasions, it causes a severe caustic reaction, sloughing the tissues and leads to grave complications and death. The simple substitution of innocuous 10 per cent sodium bicarbonate solution entirely does away with this danger. It is just as efficacious in rendering the urine alkaline and is absolutely harmless should it be injected into the kidney or bladder. There is no excuse for the urological department of any modern hospital which continues the use of sodium hydroxid as an alkalinizing agent.

AIR INFLATION OF THE URETHRA AND BLADDER FOR DIAGNOSTIC AND THERAPEUTIC MEASURES

Since 1903 air embolus has been recognized as the cause of alarming symptoms or death following the distension of the bladder with air, yet its dangers have been often underestimated, if not entirely overlooked. Recently I collected thirty-three such cases from the literature, and from questionnaires addressed to the leading urologists of America and Europe. Despite the dangers attending air distension, 10 per cent of genito-urinary surgeons still employ it. The chief reason for still employing air is that the aqueous solution that is used for vesical distension runs over the wound and when the urine is infected contaminates the same. This objection is overcome by employing suction through the stab incision of the bladder. Although the injection of air in the normal urethra and bladder is usually harmless, rupture of the bladder by overdistension or the presence of a preëxisting pathological lesion such as marked inflammation, ulcer formation, or a new growth, weaken the bladder wall and favor entrance of air into the venous circulation, giving rise to grave complications. Air in the bladder and urethra should be used with the greatest caution. One should abandon inflation of the urethra and bladder with air for diagnostic, therapeutic and operative procedures and substitute harmless, mild antiseptic solutions.

VALUE OF PROPHYLAXIS IN THE PREVENTION OF HEMORRHAGE

Although energetic measures are taken to combat hemorrhage when it occurs following an operative procedure on the prostate or kidney or after electrocoagulation of a bladder lesion, few, if any, prophylactic measures are taken to prevent its occurrence. The bleeding and coagulation time should be determined on all patients. When delayed, one should not operate until he is assured that it has been rendered normal by employment of the modern prophylactic measures at our command. These consist of the administration of calcium orally or intravenously, the giving of jello for at least a week prior to the operative interference, injection of coagulating substances such as horse serum, tissue extracts and fibrinogen, and the transfusion of blood. Unfortunately in some true bleeders neither the coagulation nor bleeding time is delayed. In 1926, in a true bleeder I experienced troublesome hemorrhages, following tunneling an obstructing median lobe of the prostate by electrocoagulation. Since that time I have prepared all patients that are to undergo any operative interference or electrocoagulation against hemorrhage. They are given one gram of calcium lactate every four hours and are instructed to take a portion of fruit jello twice a day for a week prior to operation or fulguration. Since its routine employment we have had fewer postoperative hemorrhages. When a hemorrhage did occur the blood clotted well and was more readily controlled. I offer the routine administration of calcium and jello as a prophylactic measure against hemorrhage.

SUMMARY

In keeping with the great advances that urology has made in recent years, certain time-honored procedures which have proved to be harmful and dangerous to the patient should be universally abandoned.

Novocain or other nontoxic solutions should be substituted for cocain for the purpose of producing surface anesthesia prior to the instrumentation or cystoscopy, whether for injection or topical application in the urethra and bladder.

The substitution of a metal catheter for the ordinary female glass catheter now in vogue does away with danger of its breaking in the bladder.

Cystoscopy and pyelography, although a valuable aid in diagnosis, is not without danger and is particularly contraindicated in weak, debilitated patients, in the aged, and in those presenting marked infection or lowered function of the kidneys.

Copious lubrication and care in selecting good ureteral catheters which have not been disintegrated by age or exposure to heat or to antiseptic solutions will eliminate the danger of breaking and leaving a piece in the ureter.

Because of the great possibility of air embolus, the distension of the urethra and bladder with air for diagnostic, therapeutic and operative procedures should be abandoned and harmless, mild antiseptic solutions substituted.

One should not overlook the great value of the prophylactic administration of coagulating substances prior to operative intervention on the genito-urinary organs or to electrocoagulation of lesions of the bladder and urethra.

Sodium bicarbonate should be substituted for sodium hydroxid which might be accidentally injected into the kidneys or bladder, leading to grave complications, probably death.

The individual urologist who has had embarrassing or fatal accidents is emphatic in denouncing these dangerous and unnecessary procedures. It behooves all urologists to profit by these unfortunate experiences and to undertake the use of harmless, safer methods emphasized in this address.

450 Sutter Street.

ACUTE INTESTINAL OBSTRUCTION—ITS DIAGNOSIS BY THE FLAT X-RAY FILM*

By MARCUS H. RABWIN, M. D.
AND
RAY A. CARTER, M. D.
Los Angeles

DISCUSSION *by Kenneth S. Davis, M. D., Los Angeles; Robert S. Stone, M. D., San Francisco.*

ACUTE intestinal obstruction is one of the most common emergencies encountered at the Los Angeles County General Hospital. Seeing the condition so frequently, we have been surprised at the appalling mortality. In analyzing our records we found that year after year the number of cases had increased tremendously as the county and the institution had grown, and yet year after year approximately half of the patients died. We were also impressed with the fact that cases recognized and treated within a few hours of the onset of symptoms made a short, easy recovery following a relatively simple operation, while the lapse of a few more hours resulted in a desperate situation with a fatal outcome. Obviously the problem resolves itself into one of making earlier diagnoses.

THE FLAT PLATE IN ACUTE INTESTINAL OBSTRUCTION

The use of the flat plate in the diagnosis of acute intestinal obstruction was first introduced by Case [1] in 1911. Since that time he has repeatedly emphasized its value and others [2] have reported success with its use. Recent observations by Davis [3] stimulated our interest, and, having a large volume of material, we were able to test its merit in a fairly long series of cases.

The technic is very simple. The patient is given a 1-2-3 or milk and molasses enema in order to clear the bowel of gas below the obstruction, if one exists. He is then taken to the x-ray laboratory, where an exposure of the abdomen is made on a Bucky diaphragm, using the same technic employed in making a kidney film. The patient is then returned to his bed, having been given no contrast media either by mouth or by bowel; and having suffered very little disturbance. The film is put through the solutions at once and can be read by the roentgenologist and surgeon in a few minutes. The whole procedure can be accomplished while preparations are being made for surgical intervention should an immediate operation seem necessary.

INTERPRETATION OF X-RAY PLATES

The radiographic evidence of obstruction is based upon gas-filled distended intestines, the distinction between colonic and small bowel obstruction depending upon the identification of distended gut as colon or small bowel. Normally there may be very little or a great deal of gas in the colon and a small amount scattered in the small intestines. The thing we look for to indicate obstruction, however, is distention. Gas under pressure is abnormal. While it does not always indicate a mechanical obstruction, its presence demands an explanation, and it is in the analysis of these abnormal shadows, considered in connection with the clinical picture, that the diagnostic value of the method rests. The illustrations submitted with this paper bring out some of the distinctions noted in interpretation of x-ray plates of acute intestinal obstruction.

The typical case of small intestinal obstruction presents a section of gut varying from a few inches in length to several coils, sharply outlined on the film by its air content. The degree of enlargement varies greatly, up to an enormous diameter of three or four inches, but is usually at least the calibre of the normal colon.

In the earlier stages we see one or a few gas-filled coils. The distention is moderate. The folds of Kerkring produce a feathery marking and serrated borders, the "herring-bone" appearance described by Case. As the condition progresses, the dilatation increases, more coils are seen and the appearance evolves into the typical "step-ladder type." In the well-developed case the outline shows a tautness of the intestinal wall, a partial or complete ironing out of the markings of the valvulae conniventes, and a straightening of coils with sharp buckling at the turns. When these signs are present, the colon is usually clear of gas due to repeated enemas, and we have a picture radiographically consistent with acute small bowel obstruction.

The appearance of a large bowel obstruction is entirely different. The commonest site is in the sigmoid due to carcinoma. The dilated section of colon in these cases is usually tremendously distended. The lateral position and the more or less fixed course of the large bowel together with its characteristic haustral markings serve to identify from small gut. The gas shadow begins at the cecum and progresses as a solid column under pressure and stops abruptly at the point of obstruction. The haustrations are quite persistent, but the partitions are much further apart than normal. When the condition has been of long standing we sometimes see a

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* Read before the General Surgery Section of the California Medical Association at the fifty-eighth annual session at Coronado, May 6-9, 1929.

Fig. 1.—Illustrating obstruction in the lower sigmoid; large bowel greatly distended. Gas shadow stops abruptly at point of obstruction. No small bowel shadows visible.

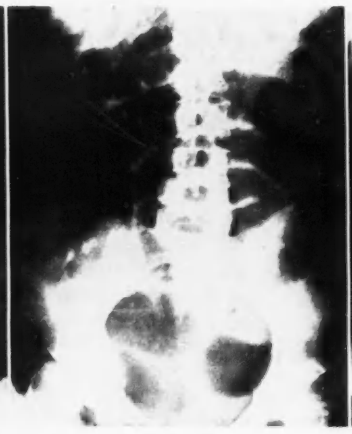

Fig. 2.—Acute obstruction in the small intestine. No colonic shadows present.

Fig. 3.—Small bowel obstruction. Isolated loop tremendously dilated, but identified as small bowel by characteristic transverse markings.

characteristic distention of small bowel due to the pressure extending back through the ileocecal valve.

ACCESSORY METHODS OF EXAMINATION

There are several accessory methods of examination occasionally useful and recommended by various authorities. Among these are films taken in the lateral position to indicate fluid levels, barium enemas to locate colonic obstruction or to differentiate colonic gas, and small amounts of barium by mouth followed by interval observations.

To spare the patient, these accessory methods have not been employed with the exception of the barium enemas, which are very useful in confirming the diagnosis of obstruction in the colon.

DIFFERENTIAL DIAGNOSIS FROM X-RAY PLATES

A differential diagnosis from the x-ray plate presents, at times, many difficulties. Some of these we have been able to work out after critically reviewing our errors. Others we are still unable to solve. In the case of obstruction in the large bowel the story is usually obvious, the colon assuming giant proportions with the gas column ending sharply. We have seen acute pancreatitis exhibit a marked distention of the transverse colon simulating obstruction at the splenic flexure. This has been observed also by Hulten,[4] who mentions it as a diagnostic point. We have not found this phenomenon constant in pancreatitis, but it does occur in some cases. The gas column in the colon, when present in this condition, tapers off and does not iron out the bowel wall as is usually seen in obstruction.

THE PROBLEM OF PARALYTIC ILEUS

The major problem in differential diagnosis concerns itself with the recognition of paralytic ileus. Paralytic ileus ordinarily is not surgical. When it occurs as an immediate postoperative complication, or occurs in the presence of injury to the chest, spine or pelvis, or is associated with ureteral colic, pyelocystitis, acute salpingitis, septic abortion, or systemic toxemias not related in any way to intra-abdominal disease, exploratory laparotomy is not only contraindicated, but is highly undesirable because it adds an additional tax upon the reserve of an individual whose life is already in the balance. When it occurs associated with the generalized peritonitis following a perforated appendix, appendiceal or pelvic abscess, ruptured peptic ulcer, gangrenous cholecystitis or acute hemorrhagic pancreatitis, we are dealing with a surgical abdomen, but an accurate diagnosis is very important in order to make a safe, effective therapeutic attack. A flat plate of the abdomen in many of these cases of paralytic ileus will simulate that of an acute obstruction in the small bowel. In a preliminary report, one of us stated that we were unable, up to that time, to differentiate the two conditions radiographically. With added experience, however, we have been able to work out a few points which enable us to read the films more accurately, although we are still confronted with many cases in which the distinction is not radiographically clear.

In a typical case of ileus we see numerous coils of only slightly or moderately distended small bowel, associated with gas in the large intestine. The abdomen in ileus may be tightly filled with innumerable gas-filled coils, none of which exhibit the signs of great internal pressure. In some cases, however, the dilatation of the small intestine is extreme and the colonic gas small in amount. The case is then not radiographically distinguishable from mechanical obstruction. Such pictures are apt to occur in cases of localized abdominal abscesses, such as arise following a ruptured appendix or pelvic inflammation.

In every instance, the clinical manifestations must be kept well in mind while interpreting the flat plate. In many cases the history labels the case at once. Fever and leukocytosis early in the attack speak against obstruction. Marked

Fig. 4.—Acute obstruction showing two well-defined, distended loops of small bowel.

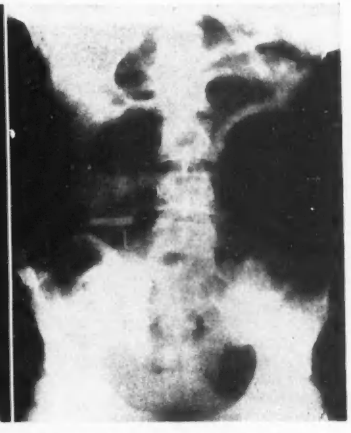

Fig. 5.—Case of paralytic ileus due to a generalized peritonitis following ruptured appendix. Note distention of small intestine. Differential diagnosis in this type of case must be made on the basis of clinical findings.

tenderness, rigidity and a peritoneal release sign are more in keeping with peritonitis. The abdomen is usually silent in ileus and is usually rhythmically boisterous in mechanical obstruction. Sometimes a second film taken after a lapse of a few hours will clarify the situation by showing whether or not gas persists in coming down into the colon after repeated enemas. This method has proved very helpful in cases of acute pelvic peritonitis, where the character of the pain and vomiting simulated obstruction very closely. Perhaps there is an element of mechanical obstruction in these cases due to kinking of the bowel through inflammatory adhesions in the pelvis. Those cases do better when left alone, however—the obstruction symptoms clear as the peritonitis resolves. By making two films at intervals of a few hours, we have been able to establish the diagnosis. Obstruction is not complete and the colon persistently demonstrates gas.

We have had a very small group of cases, five in a series of about two hundred plates, in which obstruction was present, but could not be demonstrated in the film. In one of these the film was everywhere peculiarly devoid of gas shadows. The bowel at operation was found to be distended with fluid. Clinical history and symptoms were sufficiently suggestive to warrant exploration. The other four were not absolutely negative but were placed in an indeterminate group.

The clinical value of the method has been sufficiently gratifying in our hands to justify a policy of routine flat plate in all cases in which acute intestinal obstruction is a diagnostic possibility. Many cases have been taken to surgery hours before the clinical picture demanded immediate action. When positive, it provides the surgeon with added assurance that his recommendation for immediate operation is absolutely justified, despite the patient's plea for procrastination.

In cases of large bowel obstruction where the patient had been sick for many days, an accurate preoperative localization and consequently a better-planned operative procedure has been an important factor in sparing the patient the shock entailed in blindly exploring an abdomen filled with distended bowel.

COMMENT

While it is still early to gather statistics on its value, we are nevertheless encouraged by the figures given us by the unbiased Medical Audit Department of the hospital. During the eight months in which the flat plate has been used, the mortality for acute intestinal obstruction was 23 per cent. This excludes all cases of strangulated external hernias because they present no diagnostic problem. The mortality for the three previous years for the same group of cases was 53 per cent, 37 per cent, and 40 per cent. Possibly the recent increased interest in the subject is partly responsible for the improvement in results; nevertheless we know that our cases are going to surgery earlier and fewer are dying than formerly.

SUMMARY

To summarize, a flat x-ray plate of the abdomen, without contrast media, shows a characteristic distribution of gas shadows, which in nearly all cases will not only indicate the presence of acute obstruction but will localize it in small or large bowel. Viewed in the light of clinical findings it will, in the majority of cases, lead to the recognition of bowel obstruction. The method is simple, consumes very little time, causes the patient no discomfort, and is a valuable aid in the early diagnosis of acute intestinal obstruction. It has been a definite factor in reducing the mortality at the Los Angeles County General Hospital.

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DISCUSSION

K. S. Davis, M. D. (St. Vincent's Hospital, Los Angeles).—Although Case in 1915 first called attention to the roentgenographic significance of gas distention of the bowel in cases of acute intestinal obstruction, the knowledge of this method has not been widely disseminated among the medical and surgical profession. This is unfortunate, as the procedure is simple and works no hardships on the patient, nor does it

cause any delay in those cases requiring immediate surgery. In the treatment of acute intestinal obstruction and especially mechanical ileus early recognition of the condition is of the greatest importance so that the marked depression of the later stages may be minimized or averted. In my experience the method described by Doctors Rabwin and Carter offers a valuable aid to the surgeon in the early diagnosis of acute obstruction.

During the past four years at St. Vincent's Hospital we have had approximately forty cases of obstruction in the gastro-intestinal tract in which ordinary 14 x 17 roentgenograms were made of the abdomen and pelvis, preferably through a Potter Bucky diaphragm. In all but seven of these the approximate site of the obstruction has been determined with a fair degree of accuracy. Of these seven so listed, two patients had an incomplete obstruction and were not critically ill so that a motor meal study could be done and the obstructive point localized. In one case with a negative "scout" film an intussusception of the terminal ileum into the cecum was found when the patient was given a barium enema.

The fourth case was that of a newborn infant with a congenital atresia of the colon. In the "scout" film it appeared as if the entire colon was enormously distended as well as the small bowel. Apparently this method is of little value in the localization of obstruction in very young babies as the small bowel can become so enormously distended that its shadow cannot be differentiated from the shadow of a distended colon.

In the fifth patient, the roentgenograph showed a perfectly normal appearing abdomen with practically no gas present. At the autopsy a mesenteric thrombosis was found with gangrene of twenty inches of the small intestine.

The other two cases incorrectly diagnosed were paralytic ileus; the small bowel being so markedly distended that a diagnosis of acute mechanical obstruction was made on the basis of x-ray findings. Ordinarily paralytic ileus can be distinguished from mechanical obstruction due to the fact that gas is found scattered throughout the gastro-intestinal tract in the former condition and usually occurs only above the site of obstruction in the latter.

I believe that the value of negative roentgenographic findings in cases of suspected obstruction should be stressed. Out of approximately one hundred cases with negative roentgenographic findings in my series only one had an acute obstruction which the x-ray failed to show. However, the absence of gas distended bowel on the roentgenogram should be disregarded by the surgeon if the clinical evidence points overwhelmingly towards obstruction.

It is certainly a pleasure to have work verified on so large a scale as has been done by Doctors Rabwin and Carter. I believe they have been very conservative in their claims as to the value of this procedure.

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ROBERT S. STONE, (M. D. (University of California Hospital, San Francisco).—Doctors Rabwin and Carter are to be congratulated for calling our attention so convincingly to the great value of the flat x-ray film in diagnosing acute intestinal obstruction. Their description of the findings and diagnostic points is so clear and accurate that little is left to be said in the way of discussion. The facts they present are so striking that this method should be made a routine in all suspected cases in all hospitals.

A little more might be said of what they call the accessory methods. When the findings in the first film are convincing nothing more need be done. When, however, some doubt still remains further methods are of value. One of these is the fluoroscopic observation of the patient in the upright position or semi-upright position. If the bowel contains a large amount of fluid, as well as gas, the gas shadows may be obscured in a film made with patient supine. When a tilting fluoroscopic table is available it is an easy matter, causing little disturbance to the patient, to move him in the supine position on to such a table and then gradually tilt him to the upright position or half way up. In such a position the fluid can be seen easily with the gas above it. When a tilting fluoroscopic table is not available a film made with the patient on his side and the x-rays passing through horizontally may give the same results. Any loop of small intestine showing a fluid level with gas is diagnostic of obstruction of some degree. Whether that obstruction is organic or due to a paralytic ileus is still a problem. The authors' differential points between ileus and organic obstruction are real contributions.

Where a saving of time is not so important it is of value to remember that the giving of barium sulphate mixtures is not so prejudicial to the patient's well-being as is generally believed. Case has emphasized this point.

A patient, whom we had at the University of California Hospital, developed all of the clinical symptoms of acute intestinal obstruction—eleven days postoperative. A plain film and fluoroscopic observation showed distended loops of small bowel. The Surgical Department was prevailed upon to allow the administration of some barium in water through the Connell drainage tube. This passed rapidly down the small intestine to a definite point and remained there for over six hours without passing on. The surgeons had about decided to operate when at a twenty-hour examination the barium was all seen to be in the large bowel. The patient went on to an uneventful recovery. In this case the giving of barium was at least coincident with the relief of the obstruction and did not cause a plug.

In conclusion, we want to emphasize that while the accessory methods are of value, the simplicity of that advocated by Doctors Rabwin and Carter is its great feature.

LYMPHOBLASTOMA INVOLVING THE STOMACH—ROENTGENOLOGICALLY CONSIDERED*

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AND
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DISCUSSION *by Addison E. Elliott, M. D., San Diego; Henry Snure, M. D., Los Angeles.*

LYMPHOBLASTOMA of the stomach is such a rare condition that no one roentgenologist is likely to see more than a very limited number of cases. So it is necessary to pool experiences. A review of the reported cases and of those here presented shows that a majority have been diagnosed as carcinoma. Surgery has very little to offer to either carcinoma or lymphoblastoma. X-ray therapy has a great deal to offer to the latter. If it should be possible to differentiate these two conditions without an exploratory operation, which has a high primary mortality in these often emaciated patients, it would be a great help.

OBJECT OF THIS STUDY

The object of this study is to see if any such differentiation is possible. No attempt will be made here to differentiate the lymphoblastomata

* From the Department of Roentgenology, University of California Medical School.

* Read before the Radiology Section of the California Medical Association at the fifty-eighth annual session at Coronado, May 6-9, 1929.

into separate groups, and no cases with peripheral involvement will be ruled out because, while in them a diagnosis is frequently possible by biopsy of a superficial gland, they may give in their gastric manifestations some indication of what is to be expected in cases without peripheral glandular enlargement.

PATHOLOGICAL CHANGES

The finer microscopical diagnosis will be left out of consideration, but as the gross picture is the cause of the changes shown by x-ray examination it will be considered. According to Ewing, the primary lesion of lymphosarcoma in mucous membranes is in many lymph nodules. From these, extension proceeds in the mucosa and submucosa, in which layers large bulky tumors may be formed without involvement of the muscular coat. Later invasion of the muscular coat and still later destruction of the muscle fibers takes place. Even when the stomach is secondarily invaded from surrounding glands, the process seems to extend to the mucosa and then to spread in the submucosal layers, only later involving the musculature generally.

The type of tumor that is formed by the invasion varies. At times there is a diffuse thickening of the wall with increasing rigidity and superficial ulceration. This thickening may be limited to one area and may or may not form a bulky tumor. When this occurs at the pyloric antrum, it usually results in an annular tumor with marked stenosis (Ewing). In other cases the invasion is much greater in several localized areas, producing projecting masses resembling polyps.

Regarding the general effect on the size of the stomach, it is reported that lymphosarcomata do not produce the shrinking of the stomach that carcinomata do, and that even when the pylorus is involved, it does not cause constriction. On the other hand, Ruffin, quoted by Ewing, emphasizes that if the pyloric ring is involved there is a marked degree of stenosis. The confusion seems to be over the type of invasion. The general infiltrations cause a decrease in size and stenosis. The polypoid growths are in large hypotonic stomachs and do not cause stenosis.

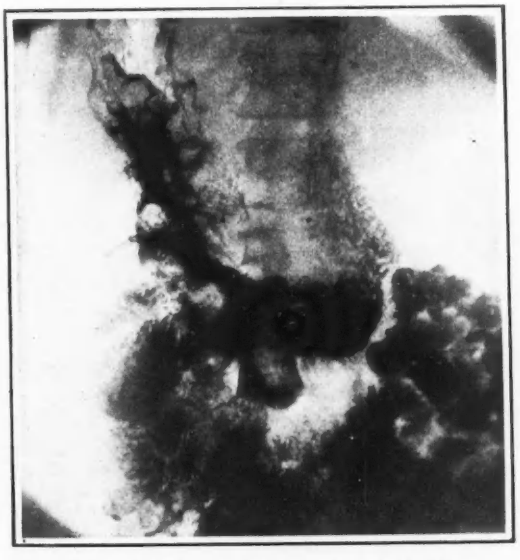

Fig. 1, Case 1.—Multiple polypoid growths

Fig. 2, Case 2.—Diffuse infiltration of the wall without definite formation

ROENTGEN RAY CHANGES

It should be possible with any given lesion to study its pathology and from it predict the x-ray findings. On this basis, lymphosarcomata of the stomach should show the following changes roentgenologically. The earliest lesions being simply mucosal invasion should not interfere with form or function and, therefore, not be demonstrable. The more extensive mucosal and submucosal invasions produce a more rigid appearing wall, or, if large enough, a filling defect. This defect will be annular, diffuse, rugose, or polypose, according to the type of the process. In these respects, they may closely resemble carcinomata and polyposis. Junghaven has pointed out, however, the important fact that, owing to the late invasion of the muscular layers, there is a time in the development of lymphosarcomata when there is sufficient infiltration to produce filling defects or somewhat rigid walls, and yet peristalsis can be seen. This seems to be the only diagnostic sign possible from a pathological point of view. It does not, however, separate the polypoid types from benign polyposis, which differentiation must be made clinically. The advanced stages of lymphosarcoma when the muscle is involved closely simulate carcinoma, but the defects may be of an unusual type.

The new cases here presented are shown in Table 1.

ANALYSIS OF CASES STUDIED

An analysis of the cases presented shows the following pathological and roentgenological findings:

Fig. 3, Case 5.—Annular infiltration in the prepyloric region

1. *Type of Tumor.*—Multiple polypoid growths (shown by multiple irregular, rounded defects); three cases; (1, 8, and 11).

Diffuse infiltration of the wall without definite tumor formation (shown by a constricted lumen with rigid walls), three cases; (2, 4, and 7).

Localized infiltration of the wall without definite tumor formation (shown by a localized area of irregularity and decreased flexibility of the wall); two cases; (9 and 10).

Single large tumor (shown by a single rounded area of filling defect); two cases; (3 and 6).

Annular infiltration in the prepyloric region (shown by an annular filling defect), one case; (5).

2. *Region of the Stomach Involved by the Tumor.*—The whole stomach, three cases; the pars cardiaca, three cases; the pars media, one case; lesser curvature, two cases; greater curvature, one case; the pars prepylorica, one case.

3. *The Roentgenologic Diagnoses Made Were:* Polyposis, three cases; scirrhous carcinoma, two cases; annular carcinoma, one case; carcinomatous ulcer, one case; malignancy, one case; not diagnosed, one case; not satisfactorily examined, two cases.

ANALYSIS OF RECENT CASES IN LITERATURE

A similar analysis of the case reports in recent literature (Holmes has analyzed the cases up to 1926) shows the following findings: Holmes, eight cases; Crohn, one case; Singer, one case; Junghaven, four cases.

Type of Tumor.—Multiple polypoid growths, one; diffuse infiltration, one; localized infiltration without tumor, two; single tumor, four; annular prepyloric infiltration, five; annular prepyloric infiltration with a polypoid tumor, one.

Roentgenological Diagnoses.—Carcinoma, nine; linitis plastica, one; lymphoblastoma, one; not made, three. The diagnosis of lymphoblastoma was not made entirely on the roentgenological findings.

COMMENT

From the above findings alone, no other conclusion is possible than that of Holmes' that the roentgen findings are not sufficiently characteristic to permit of a specific diagnosis of lymphoblastoma. But he also mentioned that in some cases the roentgen appearance differed from carcinoma in that the peristalsis was not interfered with to the same extent. Junghaven a year later suggested that the definite motility of the outline might be specific for one stage of the disease. This persistence of peristalsis in the presence of deformities that otherwise would be diagnosed as cancer seems, from a deductive point of view, to be the only differentiating sign.

Unfortunately, in some of the present series of cases, which were seen some years ago, the question of peristalsis is not mentioned. However, applying the test above to them, the undiagnosed patient (Case 2) should now be called lymphosarcoma.

Benign polyposis of the stomach does not inhibit peristalsis, so that this point cannot be made a differential for those cases showing polypoid growths. However, it would seem best to regard all cases showing polypoid lesions and clinically suspected of malignancy as lymphoblastic for a period long enough to apply a therapeutic test of irradiation.

In this series, Cases 8 to 11 are entirely from the Stanford Hospital and Case 2 was examined roentgenologically at that institution. We desire to express our thanks to Doctors Newell and Chamberlain for their whole-hearted coöperation and, through them, to the other members of the staff who so willingly gave their consent to our studying their records. Some of these cases will be reported fully from the clinical aspect in a later paper.

SUMMARY

Eleven cases of lymphoblastoma of the stomach are presented from a roentgenological aspect with the pathological findings necessary to explain the changes shown by x-ray.

It is shown that there is no type of lesion or region of involvement characteristic of lymphoblastoma, and therefore no characteristic roentgen finding.

When, however, gastric peristalsis persists with a lesion of the stomach it is most likely to be lymphoblastoma.

Gastric polyposis in a patient suspected of malignancy clinically, should be regarded as a lymphoblastic lesion and its response to x-ray therapy tried.

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DISCUSSION

Addison E. Elliott, M. D. (510 Medico-Dental Building, San Diego).—Doctors Ruggles and Stone

TABLE 1.—*Proved Lymphoblastomata of the Stomach*

CASE	X-RAY FINDINGS	PATHOLOGICAL FINDINGS
1. R. C. Female Age 33	Multiple irregular rounded filling defects of the entire stomach suggesting sessile tumors protruding into the lumen. Peristalsis was not seen under the fluoroscope, but was at times visible on the abdomen. Five-hour: 50 per cent retention. Diagnosis: Multiple tumors of the stomach.	Operation and postmortem, a few days after examination. General polyposis of the entire stomach. One large ulcer along the greater curvature where polypoid tumors were confluent. Very little muscle invasion. Only other involvement was a few small glands near stomach.
2. J. B. S. Male Age 65	A generally constricted stomach emptying rapidly. Shallow peristaltic waves shown by the films. Not diagnosed.	Postmortem one month after examination. Stomach wall uniformly, diffusely thickened by tumor infiltration. Considerable muscle invasion but not destruction. Extensive local spread. No peripheral glands.
3. A. T. E. Female Age 47	Constant, large, irregular, rounded defect on the lesser curvature involving the cardiac orifice. Diagnosis: Probable malignancy. After x-ray therapy, the defect almost completely disappeared.	Operation. Firm mass high on the lesser curvature firmly bound down to liver and diaphragm. A few small local glands. No peripheral glands.
4. J. G. Male Age 80	Extensive defect of the body of the stomach. No peristalsis. Diagnosis: Scirrhous carcinoma.	Postmortem. Diffuse thickening of wall of lesser curvature and posterior surface. Considerable muscle invasion and destruction. Extensive spread to adjacent organs and structures. No peripheral involvement.
5. J. W. M. Male Age 48	Irregular annular deformity of distal third of stomach with rounded defects protruding beyond annular cuff. No peristalsis. Mediastinal tumor. Symptoms relieved by x-ray therapy. Diagnosis: Carcinoma.	Operation six months before examination. Large mass attached to duodenum. Perforated ulcer. Diagnosed as giant-cell sarcoma. Peripheral involvement. Diagnosis of lymphosarcoma made from cervical gland shortly after x-ray examination.
6. L. F. Male Age 75	Not obtained because of patient's condition, but would have been similar to Case 3.	Fortmortem. Large mass just posterior to cardiac orifice. Similar tumor in mediastinum.
7. J. S. Male Age 56	Unsatisfactory examination because of condition, but would have been similar to Case 2.	Postmortem. All of stomach wall except the pylorus was thickened by infiltration. One large tumor mass protruded into stomach. Muscular wall destroyed. Extensive spread to adjacent organs. No peripheral involvement.
8. T. S. Female Age 38	Considerable irregularity of greater curvature in pars media. Stomach wall flexible and rugose. Peristalsis not mentioned. Diagnosis: Polyposis.	Operation. Infiltration and partial destruction of mucosa and submucosa of almost entire greater curvature with shallow ulceration. Slight muscle infiltration. No local extension. No peripheral involvement.
9. M. C. Female Age 45	Marked irregularity of contour of lesser curvature at the pars media. Peristalsis not mentioned. Diagnosis: Carcinomatous ulcer.	Operation. Infiltration and partial destruction of mucosa and submucosa producing ulceration of lesser curvature. Muscle infiltration. No local extension. No peripheral involvement.
10. G. K. D. Male Age 60	Constant irregularity of lesser curvature in region of incisura angularis. Wall less flexible in this area. No peristalsis across involved area. Diagnosis: Early scirrhous carcinoma.	Operation and postmortem. Flat tumorous infiltration limited to freely movable stomach and a few glands at time of operation. At postmortem there was a dense infiltration of the whole upper abdomen. At operation, mucosa and submucosa invaded. Muscle hypertrophied but not invaded. No peripheral involvement.
11. W. L. H. Male Age 38	Upper third of descending limb of stomach showed coarse irregularities, as if irregular masses almost filled the lumen. Wall of stomach between gas bubble and diaphragm about three centimeters thick. Peristalsis normal. 30 per cent six-hour residue. Diagnosis: Probable polyposis.	Operation. Large tumor centering on lesser curvature, but diffusely infiltrating the stomach wall and extending in to the liver and to retroperitoneal glands. Local spread. No peripheral involvement.

are to be commended for bringing this difficult and unusual condition to the attention of roentgenologists. The paper is timely. In the beginning of x-ray diagnostic work which was related to the gastro-intestinal tract, most all large filling defects of the stomach were diagnosed as carcinoma or sarcoma, and in almost all cases the diagnosis was correct. However, in time, with the accumulated experience of roentgenologists, and with more accurate correlation of pathology and x-ray findings, it has been established that there are a considerable number of cases of filling defects of the stomach that should not be definitely diagnosed as carcinomata.

The authors mention "the persistence of peristalsis in the presence of deformities" as the one differentiating sign. The radiologist doing fluoroscopic work should be watchful for this condition. It occurs to one that if roentgenologists would routinely examine the stomachs of patients with known lymphoblastoma who are coming to the x-ray therapy department, an occasional stomach involvement would be discovered, more experience would be obtained, and from this

accumulated experience it is possible that other diagnostic signs would be established.

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HENRY SNURE, M. D. (1501 South Figueroa Street, Los Angeles).—The authors deserve commendation for their efforts to differentiate lymphoblastoma from the benign and carcinomatous tumors of the stomach. While much progress has not been made, yet it is a beginning and should stimulate other roentgenologists to carefully search for these rare conditions; other worthwhile contributions to diagnosis have had a less auspicious beginning.

Results may be expected if we follow the suggestion of Doctor Elliott to repeatedly examine the stomach of patients who have lymphoblastoma of other parts of the body. Repeated examinations should inform us how long peristalsis persists in areas of filling defects and in what type of filling defect we should not expect it. We should also pool similar observations of the other noncarcinomatous invasions of the stomach.

VARICOSE VEINS—TREATMENT BY THE INJECTION OF SCLEROSING SOLUTIONS*

By THOMAS O. BURGER, M. D.
AND
HALL G. HOLDER, M. D.
San Diego

DISCUSSION *by Emile Holman, M. D., San Francisco; John Homer Woolsey, M. D., San Francisco; Norman J. Kilbourne, M. D., Los Angeles.*

VARIX of the extremities and its complications represent a common condition, inflicting semi-invalidism on many otherwise healthy individuals with coincident economic loss. Many who have symptomless varicosities consider them unesthetic. Past treatment, both palliative and surgical, has met with failures, the latter frequently with recurrence and increased invalidism and disfigurement. The development of the injection treatment has appeared in the literature on numerous occasions and needs no reiteration.

ANATOMY AND PHYSIOLOGY

Bicuspid valves divide the saphenous vein into a series of chambers, capable of being emptied in only one direction. Lateral pressure by muscular action accomplishes emptying. The valvomuscular mechanism in the deep system is efficient, but lack of direct muscular support for the saphenous vein renders it less resistant to those factors tending to produce varicosities. The valves in the perforating veins act as safety vents for the superficial system, permitting blood to flow from the overtaxed saphenous vein to the femoral.

Recently interest has been aroused in the disturbances of venous pressure. This pressure is normally influenced by capillary pressure, the suction action of the thorax, the hydrostatic pressure, and the blood volume. Pressures ten to thirty times normal have been demonstrated in varicose veins. The stagnation produced by this

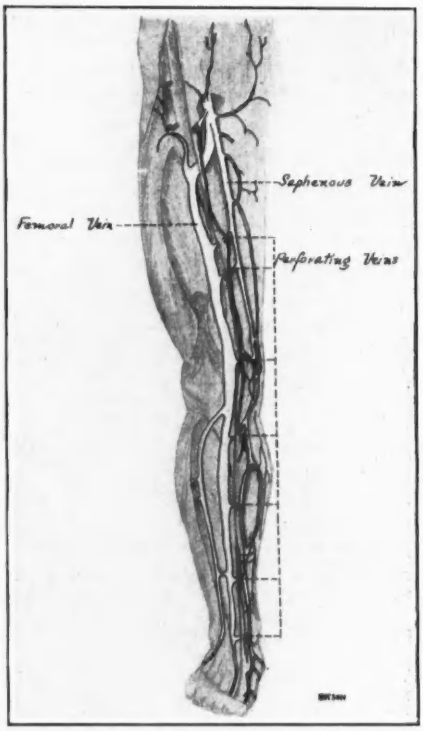

Fig. 1.—Drawing showing normal deep and superficial venous system of extremity

increased venous pressure is responsible for an increased carbon dioxid and decreased oxygen content in venous blood. The local anoxemia thus produced, with resultant acidosis, accounts for the nutritional disturbances in surrounding tissues leading to ulcer formation.

ETIOLOGY

From whatever cause, increased venous pressure, with resultant valvular insufficiency, is of prime importance in the production of varicose veins. The following are important predisposing causes: (1) heredity; (2) occupation; (3) pregnancy; (4) endocrine imbalance; (5) trophic disturbances; (6) thrombophlebitis; (7) circulatory insufficiency.

PATHOLOGIC ANATOMY

Gradual dilatation from back pressure leads to permanent malnutrition of the vein walls with resultant sclerosis. Muscle and elastic tissue are

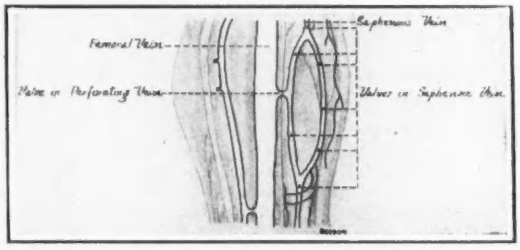

Fig 2.—Cross section, calf of leg, showing valves

* From the surgical clinic of Thomas O. Burger, Clyde J. Osborne, and Hall G. Holder.

* Paper read, with motion picture presentation, before the General Surgery Section of the California Medical Association at the fifty-eighth annual session at Coronado, May 6-9, 1929.

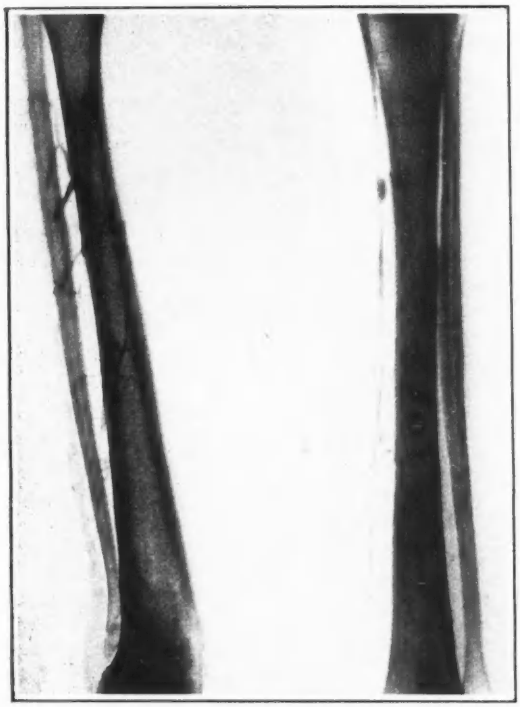

Fig. 3.—Outline of normal venous circulation of leg, using intravenous sodium iodid. Note valves

converted into fibrous tissue which stretches irregularly under pressure, producing tortuosity and sacculation, with coincident valvular insufficiency. Gross pathologic changes secondary to varicose veins are cyanosis, edema, induration, pigmentation, and malnutrition. With or without trauma, ulcer appears in this fertile soil.

DIAGNOSIS

Of prime importance in diagnosis is the establishment of the competency of the deep venous circulation.

Fig. 4.—Photomicrograph cross section of normal vein

Trendelenburg Test.—To elicit, first empty the veins in question by raising the limb and gently stroking in the upward direction. The long saphenous vein is now digitally compressed just at the point of its junction with the femoral vein, at the fossa ovalis, and the patient asked to stand up. The varices of the thigh fill slowly and gradually from the periphery. With the removal of the pressure and in the presence of insufficient valves, the unsupported blood column fills all the varices. This phenomenon demonstrates insufficiency of the superficial venous system and is referred to as a positive Trendelenburg test. Rapid filling of varices, in spite of the compression of the long saphenous vein, denotes simultaneous insufficiency of the valves in the perforating veins as well.

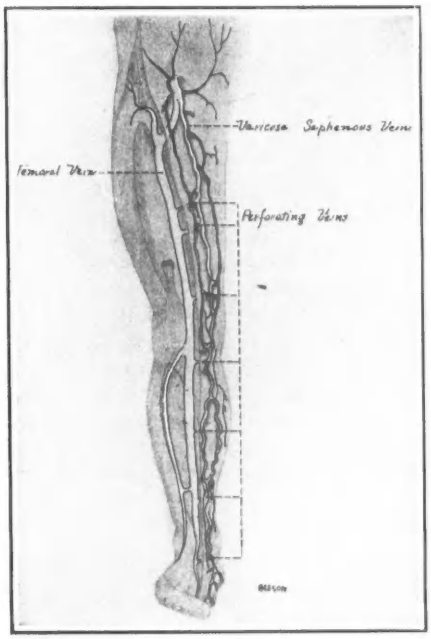

Fig. 5.—Drawing showing development of varicose saphenous vein

Perthes' Test.—This demonstrates a flow from the superficial into the deep veins, into which blood is sucked by muscular action. A tourniquet is applied to the thigh to compress the superficial veins and the patient asked to walk about the room. If the valves of the perforating veins are intact the varices diminish in size; if incompetent, back flow results. Finally, if after compression the tourniquet is released, the test is negative and all valves are competent.

Tests of Arterial Circulation.—Arteriosclerosis and diabetic gangrene, and particularly thrombophlebitis, are often associated with dilated inflamed veins. The adequacy of arterial circulation is important in these cases.

In normal subjects if a drop of 1:1000 solution of histamin acid phosphate is placed on the skin and six or seven punctures made through

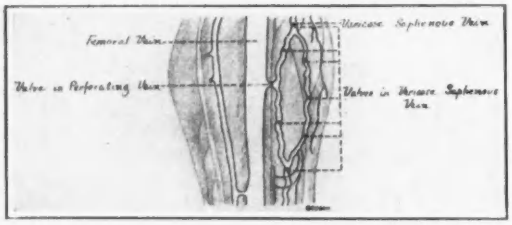

Fig. 6.—Cross section, calf of leg, showing incompetent valves in saphenous and perforating veins

the solution into the skin, there is a resultant red area followed by a wheal surrounded by a red flare. The degree of flare and the latent period of its appearance are the points to be recorded. The flare is caused by the dilatation of the small arterioles and is the result of a local reflex. A delayed or absent flare on the leg in the presence of a normal reaction elsewhere has been interpreted as an impairment of arterial flow. De Takats reports a series of thirty cases of varicose veins in which approximately 50 per cent showed abnormal reaction.

TREATMENT

In view of the foregoing considerations the chief aim in the treatment of varicose veins should be to diminish venous pressure. This may be accomplished to some extent by palliative support. Surgical removal of the affected segments has been practiced for years, but has met with numerous failures in that reformation of the varices have occurred through other anastomotic channels. Frequently the perforating veins are the source of these recurrences, as they are not amenable to surgical removal. The more recent injection treatment is simple, effective on the entire varicose system, ambulatory, nondisabling, and relatively painless. Failures are practically unknown, recurrence is variously estimated from 6 to 15 per cent in which reapplication of the treatment gives satisfactory results.

TECHNIQUE

Preparation.—Tourniquets are applied above and below the varicose area to arrest any superficial venous circulation. The leg is then cleaned with alcohol, the site of puncture painted with iodin and injection made with the patient in the sitting, standing, or semireclining position.

Solutions.—A variety of solutions have been tried, but those best standing the test of time have been the salt, sugar, and sodium salicylate. We prefer the 20, 30, and 40 per cent salicylate solutions because of their higher sclerotic index. No test has been made of the more recent combination of 20 per cent salt solution and 50 per cent sugar mixed in equal parts. The claim for the latter is a high sclerosing index, lack of tendency to slough on perivenous injection, and lack of pain following injection.

Injection.—Inject slowly so as not to overdistend the vein with resultant extravasation at the site of puncture. Perivenous infiltration is a sign for immediate neutralization with normal salt solution, followed by vigorous massage.

After-Care.—Following withdrawal of the needle, pressure is made with a gauze sponge to collapse the vein, so giving the sclerosing solution better contact with the intima and also to prevent seepage into the subcutaneous tissues. This pressure is maintained for two days by the application of an elastic bandage. The patient is allowed to rest twenty to thirty minutes until all cramplike pains, as the result of the injection, have disappeared. A considerable period of rest is further important to keep the sclerosing solution limited to the saphenous system, as muscular action is known to have forced blood into the deep circulation by way of the perforating veins.

ACTION OF SCLEROSING SOLUTIONS

The injection of sclerosing solutions does not act to produce blood coagulation; they are in effect anticoagulants, in vivo as in vitro. There is first an irritation of the endothelium with congestion and proliferation. The fibrin of the blood is deposited on the walls of the injected vessel, adhering to the entire surface of the injured endothelium.

In the third stage sclerosis sets in, involving all coats, followed by atrophy. Jenter and Askanazy mixed collargol in suspension with a solution of sodium salicylate, which, after injection, was found to have penetrated all coats of the vein. This chemical irritation of the vein has been designated by Sicard as a venitis, and is not to be confused in any way with the infectious process phlebitis. The two processes are entirely sepa-

Fig. 7.—Outline of varicose venous circulation of leg, using intravenous sodium iodid

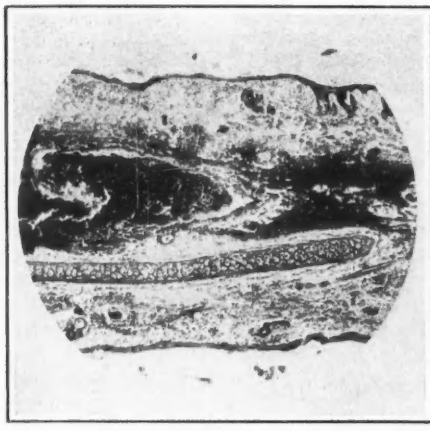

Fig. 8.—Low power microphotograph of normal rabbit's vein injected with 40 per cent sodium salicylate solution. The vasa vasorium differentiates the organized mass from the vein wall. (Courtesy of Doctor Kilbourne.)

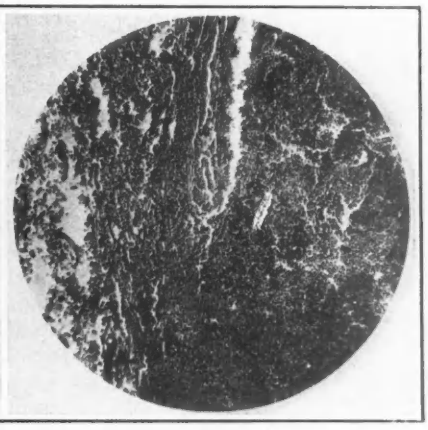

Fig. 9.—High power microphotograph of normal rabbit's vein injected with 40 per cent sodium salicylate solution. Note organization of vein. (Courtesy of Doctor Kilbourne.)

rate and distinct. In phlebitis there is an inflammatory process with thrombosis and tendency to embolism.

COMPLICATIONS

The complications that may follow injection treatment are:

1. Ulceration and sloughing, the result of perivenous injection. These are best counteracted by immediate dilution and vigorous massage.

2. Painful venitis, resulting from the penetration of all structures of the vessel by the sclerosing solution. These are best treated by rest in bed, elevation, and hot applications.

3. Embolism. In 54,000 recorded cases it occurred seven times, four cases being complicated by an acute phlebitis, a recognized contraindication to this treatment. The remaining three were in elderly persons in impaired health. The thrombotic process in venitis is an organization of the entire vein which does not permit of embolism, especially in the presence of static or reversed blood flow in the varicose vein.

END RESULTS

Two hundred and ninety-four cases have been treated by us with a good result in each instance. Minor recurrences have occurred which responded well to reinjection. In each instance care was exercised in the selection of the cases. Chief among contraindications are chronic degenerative diseases, recent history of acute phlebitis, foci of infection, and pregnancy.

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DISCUSSION

Emile Holman, M. D. (Stanford University Hospital, San Francisco).—The widespread acceptance of the injection treatment of varicose veins in the past few years indicates the hopefulness and faith of the medical profession that a simple and successful method of curing varicosities has finally been achieved. As time goes on it is becoming apparent that veins once thrombosed may become recanalized with return of the former varicosities, and that collateral channels may open up with the appearance of new varicosities. The latter are undoubtedly due to failure to produce thrombosis up to the entrance of the saphenous vein into the femoral vein, just as in former days surgical failures were frequent when the operator did not ligate the saphenous vein close to its entrance into the femoral vein. Unwillingness to inject the saphenous vein near the fossa ovalis, because of the danger of spread of the thrombosis into the femoral vein, may make it necessary to combine surgery with injections by ligating the saphenous vein in the groin under local anesthesia, followed by localized injections of sclerosing solutions wherever varicosities appear on the surface. Careful follow-up examinations are beginning to disclose an increasing number of recurrences as time elapses after injection, and experience may eventually dictate the adoption of the above combined method of treatment.

The authors advocate the injection of normal salt solution in an area accidentally infiltrated with the sclerosing solution. We have found distilled water to be more effective in diluting sclerosing solution which has entered tissues outside the vein.

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John Homer Woolsey, M. D., and Raymond J. Millzner, M. D. (490 Post Street, San Francisco).—The previous eradication of varicose veins by surgery gave end results that were not satisfactory, chiefly because of failure to recognize the source of reflow and the anomalies that occur.

The present treatment by obliteration of the superficial vein by sclerosing solutions is now a recognized and safe procedure. However, as the authors indicate, preliminary tests are of importance. Certainty that the deep or central venous system is patent is the one essential determination to be made. In our opinion, inadequacy of the arterial circulation is of no account, for, even if it does exist, it will be benefited by obliteration of a portion of the venous channels, thereby balancing the circulation.

The choice of solutions is wide. The solution that can be given by a fine needle, that is painless in the giving, and is not toxic to the patient, is preferable. Quinin hydrochlorid and urethane fulfills the above demands and has given us the most satisfactory reactions and results.

No serious complications have occurred in the treatment of over five hundred cases, and the results are most gratifying to both patient and physician.

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Norman J. Kilbourne, M. D. (2007 Wilshire Boulevard, Los Angeles).—One of the best parts of this paper is the caution as to choosing patients for injection. If you find that on the average you are refusing treatment to one patient in every ten, you are about right. The authors mentioned the Trendelenburg and Perthes' tests for patency of the deep veins. These

are of value and are used at times in our clinic, but I place more reliance on bandaging the legs from the ankle to just below the knee and again from just above the knee to the groin very firmly with an Ace bandage and then directing the patient to walk for ten minutes. If the deep veins have already been occluded by previous disease, then occlusion of the superficial veins by the bandages will shut off all return circulation and the patient will have severe pain. One should rarely inject the veins of such patients.

Aged patients with sclerotic blood vessels are prone to develop thromboses in the veins even without injection, and are prohibitive risks. In one such case which I saw in consultation, the physician in charge of the case was disappointed when I opposed treatment of the patient by injection. Two days later, without having been injected, the old man developed spontaneously a severe phlebitis with a temperature of 104 degrees, from which he barely escaped with his life. Had I allowed his veins to be injected, the injections would have been blamed for the phlebitis and he would probably also have had a fatal embolism.

The English workers are extremely cautious about injecting patients who have distant foci of infection such as infected tooth roots and tonsils. On the other hand, Gaugier pays no attention to them. I am becoming gradually more liberal in these cases when the patients are young.

A history of previous phlebitis, or milk-leg, raises difficult questions. Gaugier, after trying it on eight such cases, finally decided never to inject them. The average worker will be wise in refusing to treat such cases. There are exceptional instances where it is allowable under extreme precautions to inject such, but the responsibility is very heavy. Each case requires individual study and surgical judgment.

Most fatalities have occurred after the use of hypertonic sodium chlorid or glucose, and I still withhold approval of their use in most cases. Contrary to the claims of some workers, I have a report of an enormous slough after glucose injection. A patient in this city died recently with a typical bichlorid of mercury poisoning after its use in injecting varicose veins. It should never be used. I still use sodium salicylate in very large veins, but use more and more the quinin solutions in the smaller veins, especially in those near the ankle. The quinin solutions are painless and almost never cause a slough. If quinin is used, the first dose should not exceed four minims, as occasionally a patient with a peculiar sensitivity to quinin will show a picture of alarming collapse if larger doses are given.

The best treatment for a venitis is simple bandaging of the part with an Ace bandage. The pain is at once relieved.

I would depart from the speakers in their advocacy of the time-honored treatment of phlebitis with hot applications. Such applications tend to cause alternate contractions and dilatations of the veins with resultant danger of dislodgment of a thrombus and embolism. The best treatment is rest in bed with an Ace bandage around the site of phlebitis. If one desires, he may follow Meisen's suggestion and apply pressure with a pelote over the vein near the fossa ovalis.

The suggestion made by the reviewer that in some cases the vein be first ligated high in the thigh before injection, is reminiscent of the old method which Tavel took over from Trendelenburg and practiced at Berne in 1904. It is still practiced by workers in Italy, but the records of this procedure show a higher incidence of embolism than does simple injection.

TRAUMATIC RUPTURE OF THE KIDNEY*

REPORT OF TEN CASES

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DISCUSSION *by Miley B. Wesson, M. D., San Francisco; Louis Clive Jacobs, M. D., San Francisco.*

THIS article is written to emphasize: (1) the common occurrence of ruptured kidney as a pathological entity; (2) the pitfalls in exact diagnosis which call for urological skill; (3) conservatism, as the apogee of treatment.

To aid recapitulation it is fitting to consider the subject under appropriate captions.

Although Galen in 1561 described subcutaneous rupture of the kidney, little attention was paid to the lesion until the classical work of Royer in 1839. Within the last few years literature has been enriched by numerous contributions due, doubtless, to the increasing speed and complexity of modern civilization which supplies an endless chain of cases and to advancement in the practice of urology.

ETIOLOGY

The mechanism of forces that produce traumatic rupture is somewhat controversial. For practical purposes it may be considered that the force of the impact is sufficient to compress the kidney between the floating ribs above, and the transverse processes of the vertebrae beneath, generally the first and second lumbar. Any pathologic condition of the kidney, especially one characterized by increased intrarenal pressure predisposes to rupture since in these cases there is usually a coincidental thinning of the renal parenchyma. In such a kidney only a slight blow or concussion, as a fall upon the buttocks, or a sharp muscular flexion, may precipitate a fracture. Rupture of the kidney is apparently commonest in men, more frequent on the right side, and the site is most often the posterior surface.

CLASSIFICATION

From the standpoint of pathology, Tuffier's original division into (1) ecchymosis, (2) subcapsular rupture, (3) transcapsular or total rupture, stands unchallenged. The latter group may or may not involve the kidney pelvis.

Many cases of ruptured kidney fall into the subcapsular category, and are benign clinically, responding promptly to expectant rest in bed. There is little blood loss usually, since the oozing from the lacerated surface is promptly checked by internal resistance. Degeneration of damaged secretory tissue rapidly follows, leaving in its wake the inevitable fibrous tissue substitution. Functionally, as indexed by the dye test, there is little detectable damage remaining.

Complete fracture of the kidney offers a different problem because of hemorrhage and extravasation of the urine. The hemorrhage is seldom sufficient to cause death in a few moments except where the pedicle is torn, and this alone is a rare

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accident. In cases coming to the autopsy table as a result of terrible external violence, other visceral injuries frequently overcast the kidney picture. Doctor McDonnell, Sacramento County physician for fifteen years, has autopsied ten cases with torn kidney pedicles, all with other grave concomitant lesions such as ruptured liver, spleen, etc., and in each case death had occurred in a brief interval after the accident. In other words, an application of force of sufficient vehemence to tear the pedicle of the kidney in its deep and protected position is prone to injure as seriously contiguous vital organs.

The hemorrhage from the torn surface may form a huge clot about the kidney, completely surround the organ and stop bleeding by internal pressure. It may cease by thrombosis of the renal vessels or the ooze may continue slowly for several days, forming a huge mass in the loin and gradually reduce the hemoglobin to a surprising degree. In rare cases the peritoneum is torn, and bleeding occurs intraperitoneally. In these cases the lesion is almost always on the anterior or ventral kidney surface.

Extravasated urine, if sterile, may be absorbed in small quantities; but it more often becomes infected and constitutes a retroperitoneal abscess. In other cases the urine diffuses through the tissues and sets up an extensive cellulitis. A collection of urine in the loin always augurs the presence of an injury through a calyx or into the renal pelvis. Lacerated kidney tissue *per se* is unable to secrete urine.

In the transcapsular type of rupture where a single lesion exists, it is more often transverse, due probably to the fact that the kidney development is parallel to the tubules and vessels.

Rupture of the kidney pelvis alone is extremely rare owing to its sheltered position, its great depth and inherent muscular properties. Even under maximum distention it seldom ruptures, the kidney itself usually bearing the brunt of any blow.

SYMPTOMS

There is a wide diversification of the clinical picture presented. In severe cases the patient is acutely and critically ill.

Shock and Collapse.—There is always some shock. It may be of momentary duration only and the patient continue with his work, as in case seven, or it may continue, as it did in Cases 1, 2 and 3, for several days. It may be slight at the outset only to become magnified later, due to continued hemorrhage, as in case ten. The most extreme cases of shock are encountered, it seems, in intraperitoneal bleeding. The shock bears a direct relationship in many cases to the character and magnitude of applied external force rather than to the extent of actual kidney injury.

Hematuria is the most constant of all signs, though not infallible, because it may occur early and subside quickly. It may continue in the form of decolorized red blood cells and free blood pigment for a considerable time after the accident.

Mass in the Loin.—This occurs only in the complicated cases and varies in size, extent, and rapidity of accumulation. The location of the injury to the kidney determines whether the mass consists of blood, urine, or both. It rarely appears in cases which show injury to the ventral kidney surface.

Pain and Tenderness.—Pain is experienced both in front and in the back over the affected side, also often low in the groin. Tenderness is not only elicited in the lumbocostal angle, but is often widespread anteriorly and posteriorly.

Muscle Rigidity.—Often unilateral, it may involve the abdominal muscles on both sides. The leg on the affected side is also drawn up at times.

Evidence of Peritoneal Irritation.—This group of symptoms often clouds the picture. Nausea is most common, vomiting is frequently present, as likewise is tympanitis. Hiccough is rarer.

Temperature is slightly elevated, rarely above 101 degrees Fahrenheit at the beginning.

White blood cells are rarely above 20,000, and often 15,000.

Hemoglobin is usually decreased in direct proportion to the bleeding.

Coincidental injuries are: contusions, abrasions or ecchymosis over the side involved, fractured ribs, traumatic pneumonia, internal injuries, etc.

DIAGNOSIS

Simple fractures of the kidney are not uncommon in industrial practice. Because they simulate intraperitoneal lesions and often ameliorate rapidly under watchful waiting in bed, the diagnosis may be overlooked. Careful history taking and diligent observation of clinical signs are essential. Possibility of kidney rupture should be thought of in all cases of force applied to the loin. Concurrent injuries should not be allowed to obscure the underlying renal injury. All suspicious cases warrant careful study by a trained urologist. Pyelograms are invaluable in many cases to confirm the diagnosis, to accurately depict the lesion and to provide an unabridged description thereof.

Even superficial study reveals the multiplicity of symptoms presented by these cases and demonstrates the arduousness of accurate correlation. In simple cases, even though the patient demonstrates all presumptive evidence of ruptured kidney, the evidence is presumptive only and not conclusive. Might the accident not activate previously "silent" pathology in the affected side? A clinical diagnosis made by inference is not a comprehensive and scientific one, or, in the words of Doctor Deaver, "You walk by faith and not by sight." The valuable information obtained and the brief interval required to do a pyelogram more than compensate for any inconvenience or possible hazard to the patient. However, at times the patient's condition precludes their employment and a nicety of judgment is requisite in the decision.

Fig. 1 (Case 1).—Rupture through middle calyx with extravasation of pyelographic medium in the tissues.

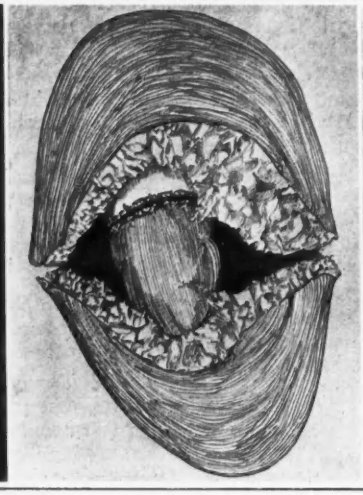

Fig. 2 (Case 1).—Organized blood-clot showing lacerated bleeding kidney within.

Fig. 3 (Case 1). — The upper half of the kidney was blanched and ischemic. The lower portion showed some mottling, but for the most part was red and congested.

TREATMENT

This might be compressed into assiduous study, precise interpretation of the clinical signs and conservatism whenever possible.

At first, of course, expectant watching and appropriate measures are necessary to combat shock. It is true that many cases get well if left alone, but it is equally true that other cases are retarded in recovery and actually jeopardized by an unwise "Pollyanna" attitude. Especially is this true in cases which have urinary extravasation, where sluggish action may necessitate a nephrectomy or may even spell death. Likewise prompt action is called for in cases of intraperitoneal bleeding.

In cases showing a loin tumor which rapidly increases in size, thus giving evidence of continued internal hemorrhage, or in doubtful cases an exploratory operation is indicated. The patient's condition permitting, the entire kidney and pelvis should be exposed and carefully searched for tears, rents or lacerations.

Extreme conservatism should now be manifested and a nephrectomy be done as seldom as possible. Badly comminuted or pulpified kidneys necessitate removal, as do also kidneys which evidence gross preëxistent pathology. Extensive damage to the pelvis or a complete transverse tear here also calls for nephrectomy. Resection in suitable cases is infinitely preferable to removal.

Bleeding can usually be controlled by sutures and, if necessary, a bit of fat may be used as a brace to prevent the sutures cutting through the kidney tissue. Packing is rarely necessary.

Ample drainage must be given in all cases. In many cases a fistula persists for several months after operation, especially if the case is complicated by copious extravasation of blood or urine.

REPORT OF CASES

Case 1.—The patient, a 43-year-old male, fell about thirty feet, landing with his right loin across a fallen tree trunk. He was kept in the camp hospital because of shock and a compound fracture of the right arm. November 1, 1927, five days later, I saw him because of his hematuria. He looked extremely ill and vomited continuously. He had a tympanitic abdomen with a huge tender mass in the right loin. The abdominal muscles on the right side were rigid and the right leg flexed. The urine contained free blood pigment and 120 to 130 decolorized red blood cells per high dry field. Temperature was 100.5 degrees Fahrenheit; hemoglobin, 52 per cent; and white blood count, 15,800.

On cystoscopy the left kidney was normal. From the right ureter issued decolorized red blood cells and blood pigment. The phthalein appeared in ten minutes and only 10 per cent was recovered in thirty minutes. Fifty cubic centimeters of sodium iodid was slowly injected without the production of any pain or spasm (Fig. 1).

Operation was performed immediately after this examination. Upon opening the quadrangular space we came upon a huge chocolate-colored, ovoid mass extending above, up under the diaphragm and far down into the iliac fossa below. This mass could not be freed from the surrounding tissues, so an incision was made therein. The huge organizing blood-clot was found to be about two inches thick, and at the center lay the kidney (Fig. 2). A single fracture line was evident, directly in the middle of the kidney, blood continuing to ooze with each heart beat from the lacerated surface (Fig. 3). Nephrectomy was done and as much as possible of the huge clot was removed.

Laboratory examination of the specimen showed atrophic and degenerative changes in the tubules of the anemic portion and numerous infarcts in the turgid lower portion.

Patient made a recovery uneventful excepting for a fistula, which persisted for six months following the operation.

Comment.—In the light of subsequent study I believe a resection would have been the operation of choice here.

Fig. 4 (Case 2). — A rupture of the middle calyx with extravasation of pyelographic medium.

Fig. 5 (Case 2). — A schematic drawing of the findings at operation.

Fig. 6 (Case 2).—Pyelogram made one year after rupture, showing destruction of the middle calyx by scar formation and some blunting of the upper calyx.

Case 2.—The patient, a 33-year-old male, on November 18, 1927, fell ten feet, striking his left loin on a pile of timber. He was hospitalized at the camp for three days because of shock, and I saw him five days later. He stated that he voided bright blood immediately after the accident, but twenty-four hours later the urine was clear.

He looked acutely ill. There was a large tender mass in the left loin. Abdominal muscles were fixed as a whole, and moderate distention, with slight nausea and no vomiting, was present. Temperature was 100 degrees; pulse, 108; hemoglobin, 54 per cent; white blood count, 14,900. Urine showed fifty red blood cells per high dry field.

Provisional Diagnosis.—Rupture of the left kidney. Patient was cystoscoped to gain additional information and to confirm the diagnosis. Righ kidney was normal. Blood flowed entirely from the left kidney. In the left kidney phthalein appeared in three and one-half minutes, 20 per cent in thirty minutes. Sixty cubic centimeters sodium iodid was slowly injected with no pain and no spasm (Fig. 4).

Operation immediately followed. Exposure of the perinephritic tissues disclosed over a quart of jelly-like clots, urine and free blood surrounding the kidney. A transverse tear in the cortex of the kidney, radiating upward, was revealed about five centimeters in length, through which the finger could be introduced into the pelvis (Fig. 5). Bleeding was controlled by sutures and pressure packing.

Following operation, urine leaked profusely from the wound for one week, then it gradually ceased and became entirely dry on the twelfth day. Patient was discharged on the twenty-first day. A small fistula persisted for over three months.

One year later the patient reported that he experienced no bad effects from his accident except that he was not so strong as previously. He occasionally had backache when he worked strenuously. A cystoscopy with pyelogram was done. The phthalein appeared on the left side in three minutes, and 25 per cent was excreted in thirty minutes (Fig. 6).

Comment.—This case proves the value of conservative treatment.

* * *

Case 3.—The patient, a 41-year-old male, on May 13, 1924, while crossing a railroad, riding upon a load of hay, tumbled and fell across the rails upon his left loin. He was taken to a hospital nearby in profound shock, where he was treated for fractured ribs, and traumatic pneumonia, which was subsequently diagnosed empyema. Following the accident, he complained bitterly of pain over his left loin, at the site of the rib fracture, but his symptoms were made difficult by the fact that he could speak no English. He voided bright red blood at first, but it cleared directly.

His fractured ribs, with the subsequent pneumonia, overshadowed the underlying kidney lesion. It was not until two weeks later that his urine was examined and found to contain pus and blood, and then only after a huge swelling had appeared in the left loin. He suffered chills, high fever, sweats, and gradually became weaker and emaciated. On June 9, when I saw him he was practically moribund.

Under local anesthetic an incision was made in the loin and evacuation of probably a gallon of foul-smelling urine and pus followed. A large drainage tube was placed in the side.

About ten days later a Garceau catheter was introduced into the left kidney, but no urine flowed from the catheter. Sodium iodid, injected, did not distend the kidney, but flowed through the fistula in the loin.

The patient's condition improved steadily. The urinary drainage from the side began to decrease the fifteenth day. The patient left the hospital two weeks subsequently. He would permit of no cystoscopy at

Fig 7 (Case 3).—One year after traumatic rupture of kidney. Pyelogram made with eighteen-inch column of sodium iodid. (Courtesy of Dr. Miley B. Wesson.)

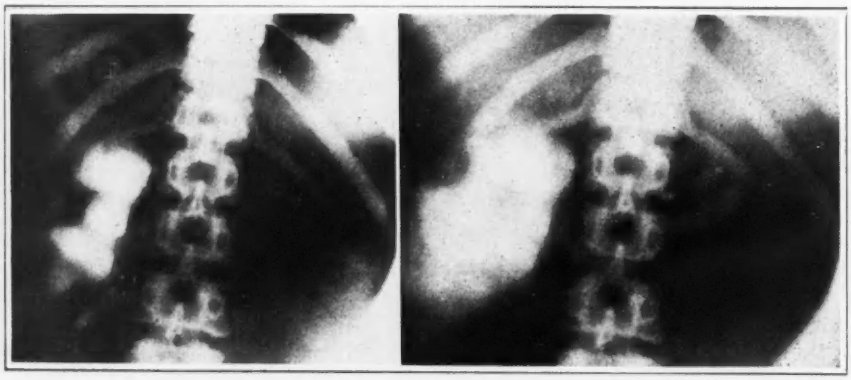

Fig. 8 (Case 4).—Injection of hydronephrotic sac with forty cubic centimeters of sodium iodid.

Fig. 9 (Case 4).—Same as Fig. 8, showing the sodium iodid flowing out into the perinephritic abscess.

this time. A small fistula persisted for six weeks. One year later the urine was uninfected, the phthalein was decreased 50 per cent, and pyelogram showed destruction of the middle calyx (Fig. 7).

Comment.—This case shows some of the difficulties of diagnosis. All attention was focused upon the rib fracture and the resultant chest condition, and the kidney was overlooked. There was a fracture through the middle calyx and pelvis of the kidney, through which urine slowly seeped.

* * *

Case 4.—The patient, a 41-year-old woman, was first seen November 6, 1922. She had complained of "cystitis" for fifteen years, and eight years before had obtained temporary relief by a kidney fixation.

She complained of backache, pain over the right side, exhausting night sweats, loss of weight, and dysuria. Her white blood count was 19,600, and hemoglobin 70 per cent. Examination of the urine showed this to be pus-laden, containing mixed infection. Repeated examination demonstrated no Koch's bacilli. A catheter introduced into the right kidney after repeated attempts, due to an obstruction about two and a half inches outside of the bladder, demonstrated the presence of a large hydronephrosis with only a trace of phthalein in thirty minutes. The left kidney was normal. Operative removal was advised, but the patient refused. Dilatation of the ureter facilitated drainage of the sac, and this probably gave her temporary relief.

She was next seen on April 27, 1925. She reported that four days prior, while attempting to rise from a sitting position, she had experienced a lancinating pain in her right side. She slid to the floor, striking her loin a slight blow on the side of the bed and had suffered great pain in the right side ever since. There was little or no shock at the time the accident happened. She was having chills, fever, and sweats. She vomited constantly and looked extremely toxic. There was a small tender mass in the right loin, rigid abdominal muscles, and a 24,200 white blood count. Plain x-ray showed only an increase in the kidney shadow. A tentative diagnosis of ruptured hydronephrosis with perinephritic abscess was made. For scientific purposes a catheter was introduced into the right kidney after the patient was under an anesthetic. Accompanying pyleogram showed extravasation (Figs. 8 and 9).

Operation. — At operation a large quantity of thin pus was evacuated from the loin. The site of the fracture was a small tear near the upper pole. Owing to the patient's condition, no attempt was made to remove the sac at this time. A large tube was used as a drain. Urine escaped from the incision for two weeks, when it gradually ceased. Patient would consent to no subsequent operation and left the hospital.

Comment.—There is some possibility that this case belongs in the spontaneous category. Being familiar with the case urologically beforehand, no difficulty was experienced in making a diagnosis.

* * *

Case 5.—This patient was an 18-months-old male who had never been sick. After a long journey to Oregon, his mother noticed that each time he urinated the diaper was stained with pus and blood, and that he cried lustily following the act. He disliked being moved and was extremely tender over his right side. He refused feedings, and the temperature ranged from 103 to 105. After resting a few days in Oregon, during which the patient grew steadily worse, he was brought by automobile four hundred and eighty miles to Sacramento. His condition then was critical.

On his arrival, August 21, 1924, examination showed a mass in the right loin, rigid muscles, and marked emaciation.

Operation was performed by Dr. J. B. Harris, who made an incision in the loin and found a quantity of cloudy fluid; both kidney and ureter being of unusually large size. Urine, however, could be squeezed easily into the bladder through the ureter. Owing to the precarious condition of the patient, no delivery of the kidney was carried out. An incision was made into the ureter for drainage.

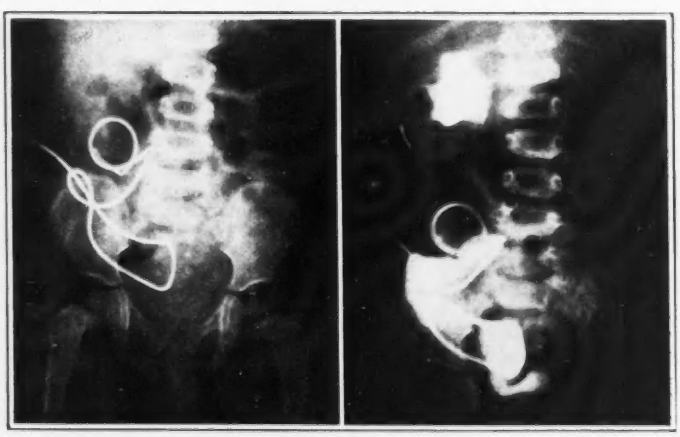

Fig. 10 (Case 5).—A catheter introduced into a hydro-ureter through the loin.

Fig. 11 (Case 5).—A pyelogram made by injecting a hydro-ureter through a loin incision.

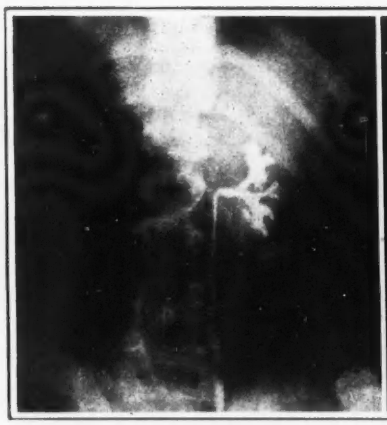

Fig. 12 (Case 6).—Subcapsular rupture through lower calyx.

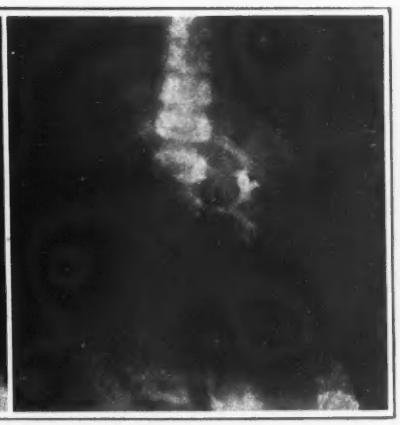

Fig. 13 (Case 6).—Spontaneous repair of subcapsular rupture.

When I saw him a week later his general condition was greatly improved and his temperature was normal. Urine was pouring out copiously through the drainage tube. The tube was removed and a ureteral catheter introduced through the fistula in the loin. No cystoscope could be introduced into the bladder because of some anatomical deviation at the bulb. However, a nasopharyngoscope was easily introduced and the right ureteral orifice appeared normal. Mercurochrome-220 injected through a catheter in the fistula appeared quickly in the bladder. A Garceau catheter was introduced into the ureter through the loin (Fig. 10) and, although there was some leakage, 15 per cent phthalein was collected in thirty minutes. A pyelogram was then made (Fig. 11). The fistula closed in twenty days. The urine was sterile, but contained about twenty pus cells per high dry field.

Comment.—This was undoubtedly a case of subcapsular rupture of the kidney, secondary to increased hydraulic pressure, due to an obstructive hydro-ureteral angulation. It demonstrates the difficulty of diagnosis in the absence of pyelography.

* * *

Case 6.—An eight-year-old boy was playing on the roof of the family garage on November 19, 1928, when he lost his footing and tumbled off in such a manner that his right loin struck a rail fence at the side of the building.

There was some shock and nausea which soon subsided, and directly he voided bright red blood. When I saw him in the hospital his temperature was 99.8 degrees Fahrenheit; white blood count, 13,400; urine showed blood cells too numerous to count. No mass appeared in the right loin. The blood continued unabated in the urine for four days, when a pyelogram was done. Sodium iodid, eight cubic centimeters, was slowly injected. Pyelogram showed subcapsular fracture with the injecting fluid collected beneath the capsule, apparently connecting with the lower calyx (Fig. 12). The tenderness over the right side slowly subsided. Blood cleared following the pyelogram, but returned about a month later, following a strenuous ball game. A pyelogram showed that the tear had healed (Fig. 13). Phthalein was normal.

Comment.—A subcapsular rupture that healed spontaneously with rest and hematuria stopped by pelvic irrigation, as in essential hematuria.

* * *

Case 7.—A twenty-two-year-old male fell across a garage pit striking his right loin lightly, the force of the fall being broken by his arm. He felt weak, but continued his work for the remaining fifteen minutes of the day.

The next day he complained of tenderness over the right loin and was "faint" when he stood on his feet. He entered the Sisters' Hospital that day complaining of slight dysuria, nausea, pain over right loin (both anteriorly and posteriorly), and in the lower right iliac region. Red blood cells forty to fifty per high dry field in the urine. White blood count, 18,600; temperature, 99 degrees. Plain x-ray negative.

No mass appeared in the loin and the pain gradually subsided. Blood in the urine slowly cleared and white blood count fell. Patient would permit of no cystoscopic examination. In two weeks symptoms disappeared and patient was able to return to work.

Comment.—This was clinically a case of simple rupture of the kidney, which responded to expectant rest in bed. This case demonstrates the lack of accuracy in a clinical diagnosis. Were it not for the blood in the urine the symptoms would have justified a diagnosis of appendicitis.

* * *

Case 8.—A twenty-month female who had been sickly and delicate since birth, had been under medical treatment for one month because of pyuria. I saw her on April 18, 1927, because two days prior, while sitting upon a rocking horse, she tumbled off on her right side, and since that time she had been exquisitely tender over this loin. Temperature was 103 to 105 degrees. She vomited continually. Urinated every fifteen to thirty minutes, the act provoking great distress; urine had a foul odor, contained white blood cells, too numerous to count, and many red blood cells. No mass could be felt in the loin.

Urologic examination revealed on the right side a tight ureteral obstruction about one and a half inches outside of the bladder. The impediment was gradually dilated with a ureteral bougie, and a No. 7 French catheter was introduced into the kidney. Phthalein appeared in five minutes, 10 per cent in thirty minutes, and a pyelogram made by slowly injecting five cubic

Fig. 14 (Case 8).—A subcapsular rupture through the upper calyx of an infected kidney of a twenty-month infant, following a fall from a rocking-horse.

centimeters of sodium iodid (Fig. 14) showed a rupture of the kidney with a collection of the sodium iodid beneath the capsule near the upper pole. At present the urine is uninfected and the phthalein is normal.

Comment.—Dilatation of the ureteral stricture for drainage followed by irrigation of pyelographic media, and rest in bed resulted in a cure of not only a subcapsular rupture, but also the preëxisting intractable pyuria.

* * *

Case 9.—A 31-year-old male had complained of a dull, dragging pain in the right loin for about two years. He fell and broke his back in May 1925. Shortly after a successful bone transplant he developed a persistent fever, with chills, sweats, headaches, and loss of appetite.

The x-ray showed the presence of a pyramidal stone in the pelvis of the right kidney. The base of the stone was more or less rounded, occupying a lateral position, the apex being medially directed. There were two or three small spicules coming off the larger stone, which apparently filled most of the pelvis. These spicules radiated toward the calices. Cystoscopically the left side was normal. Right side infected, trace of phthalein in thirty minutes. No pyelogram was done because the stone almost filled the pelvis.

At operation, August 3, 1925, the small, sharp tip of the stone was found to have perforated the anterior wall of the pelvis and there existed a small pocket filled with pus and urine well walled off from the surrounding tissue, but communicating with the pelvis by the minutest of openings. The keen edge had, apparently, thinned the pelvis to the point of breaking. The process, however, must have been a slow seepage, since it was so completely taken care of by nature, and hemmed in against dissemination.

The stone was removed quite easily through the pelvis. The cul-de-sac about the pelvis drained and the patient made an uneventful recovery except for prolonged urinary drainage lasting three weeks.

Comment.—This case illustrates the point that a stone may erode through the pelvis. The accident the patient suffered may not have been an exciting factor, although I think it was.

* * *

Case 10.—A 47-year-old male was pinned between the steering wheel and the door of his auto when the latter somersaulted down a thirty-foot levee. He was hospitalized for observation on account of shock and three broken ribs on the left side. I saw him, because of suspected kidney rupture, about twelve hours later at the Rideout Hospital, Marysville.

He presented the following: blood and clots in the urine; rapidly increasing shock; accelerated and shallow respirations; feeble running pulse, 132 to 144; constant vomiting; and extreme thirst. His hemoglobin was 30 per cent. Exquisite pain existed over the left costovertebral angle, but no mass. Abdomen was soft, with considerable tympanitis and some shifting dullness in the flanks. Every body movement provoked great pain.

His extreme condition precluded accurate diagnosis other than to establish the fact that the blood came entirely from the left kidney. Provisional diagnosis of intraperitoneal kidney rupture was made. He never reacted from the shock. Autopsy showed a rupture of the kidney on the anterior and upper surface (Figs. 15 and 16). There was also a large torn mesenteric vessel just in front of the kidney. The pelvis of the kidney communicated directly with the peritoneal cavity via the rupture.

Fig 15 (Case 10).—Showing laceration on ventral surface of the kidney with hemorrhage intraperitoneally.

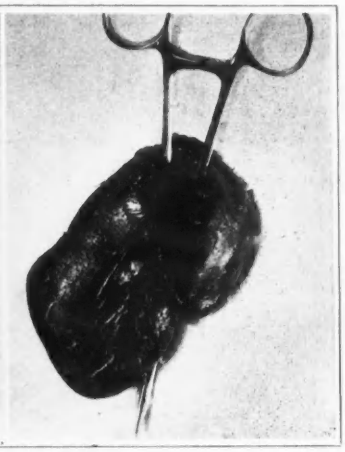

Fig. 16 (Case 10).—Hemostat through laceration into kidney pelvis. The latter in direct communication with peritoneum via laceration.

Comment.—This is the rarer type of kidney rupture as to location, accompanied by intraperitoneal bleeding, illustrating the attendant profound shock.

CONCLUSIONS

1. Traumatic rupture of the kidney is more frequent than the spontaneous variety and is invited by existent renal pathology.

2. Rupture may be divided arbitrarily into two groups: (*a*) Mild or subcapsular. (*b*) Complicated or transcapsular.

3. Trauma to the loin is frequently provocative of subcapsular laceration. This is usually benign, clinically, but may be confused with intraperitoneal lesions.

4. Transcapsular rupture begets both hemorrhage and urinary extravasation.

5. Hemorrhage following rupture of the kidney is seldom lethal and rarely dangerous.

6. Extravasation of urine denotes injury to the renal pelvis or through a calyx, and necessitates prompt action.

7. The symptoms are diversified, but the most constant is hematuria. Either concurrent injuries or evidence of peritoneal irritation are prone to cloud the picture.

8. A presumptive diagnosis may be made by analysis of the symptoms, but a comprehensive one is possible only with use of pyelograms or surgery.

9. Treatment, other than expectant observation in bed, calls for nice judgment between too great complacence and too great enthusiasm surgically.

10. If doubt exists, err on the radical side and investigate.

11. Nephrectomy is to be done only as a last resort.

12. Brilliant results recompense conservative effort.

13. The paper presents for study the following cases:

(*a*) Rupture of the kidney with the formation of a huge perirenal clot; nephrectomy; cure.

(*b*) Rupture of the kidney with a ragged line of continuity; extravasation of blood and urine; suture and pressure packing; cure.

(*c*) Rupture of the kidney through the lower calyx and pelvis, confused with a traumatic pneumonia and supposed empyema; late incision and drainage of infected extravasation; cure.

(*d*) Spontaneous rupture of a hydronephrotic sac; incision and drainage; cure.

(*e*) Rupture of a congenital abnormal kidney in a child eighteen months of age; incision and drainage; cure.

(*f*) Subcapsular kidney rupture, diagnosis confirmed by pyelogram in a boy of eight; palliative treatment; cure.

(*g*) Clinical course indicated laceration of the kidney, but early symptoms could have been easily confused with appendicitis.

(*h*) Subcapsular rupture of the kidney in a girl twenty months of age; dilatation of ureteral stricture; cure.

(*i*) Traumatic rupture of pelvis by sharp stone; pyelolithotomy and drainage; cure.

(*j*) Intraperitoneal rupture of the left kidney, followed by profound shock and death.

Medico-Dental Building.

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DISCUSSION

MILEY B. WESSON, M. D. (490 Post Street, San Francisco).—Traumatic rupture of the kidney is not a rare condition. Practically every surgeon has seen one or two, a few have seen more, and in all about nine hundred cases have been reported in the literature, but in many of these the diagnosis is based on symptoms alone.

Doctor Beach's series is unique. Ten patients with traumatic rupture of the kidney have been seen in his private practice during the past five years. The diagnosis of only one of his cases was based on symptoms alone; the others were all proved by pyelograms or the operative findings. His treatment has been conservative, six patients being operated upon and only one nephrectomy done.

Primary nephrectomy should never be done except for a torn renal pedicle. Subcutaneous ruptures of the kidney heal without operation and with a function loss of 50 per cent, or less. By saving a ruptured kidney we preserve a useful organ, even though its function is somewhat impaired by the cicatricial bands strangulating some of the parenchymatous elements of the organ. Furthermore, in case of subsequent destruction of the uninjured kidney the impaired one is able to do all the work.

The one fatality in this series was a death from shock due to intraperitoneal renal hemorrhage. No surgery was attempted, as the operative treatment of rupture of the kidney is always secondary to the therapy of shock.

Hematuria is not an indication for operation, but is merely a signal, while the hematoma is the measure of the lesion. Hemorrhage within the capsule is generally stopped by the hematoma and requires no surgery. Very often the same is true of a tear through the capsule or pelvis and the hematoma or urinary extravasation will absorb, accompanied of course by an elevation of temperature. There is always the possibility of the extravasation becoming infected, resulting in a walled-off abscess or diffuse cellulitis that requires radical surgery. Pyelography in Doctor Beach's hands has proved to be a harmless procedure and should be done immediately in every case of suspected kidney rupture. Then, if the integrity of the kidney capsule or pelvis has been impaired with resultant extravasation, the tear can be sutured, the wound drained, and the possibility of future nephrectomy because of infection obviated.

Of particular interest in this series of cases is the absence of allegations of pain in the healed kidneys. In the beginning of industrial compensation, practically all workmen who suffered from ruptured kidneys expected to be permanently pensioned because of their backaches, which either did not exist or, if present, were due to infections of the seminal vesicles and prostate. A kidney can be pinched or torn without any discomfort to the patient, but pulling on the ureter or overdistending it causes instant pain. Hence, if pyelograms show the kidney in the proper position and with no abnormal mobility so that kinks cannot occur, all possibility of "kidney pain" is instantly ruled out.

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LOUIS CLIVE JACOBS, M. D. (450 Sutter Street, San Francisco).—A perusal of Doctor Beach's thesis convinces us of the frequency of traumatic renal rupture.

However, there are various degrees of severity in renal injuries. Rupture of the kidney varies from the severe to the mild types. In the former there are present: shock, hemorrhage, hematoma, and urinary changes. In the latter there are few symptoms, practically no definite physical findings, and the patients recover without surgical intervention, with but a day or two of hospitalization. The mild type is more often referred to as contusion of the kidney. Inasmuch as every contusion of the kidney has at least a partial rupture, and in every rupture there is contusion, all these cases (for clinical classification) are considered as renal rupture.

The degree of injury is dependent upon the intensity of the traumatic force, the point of its application, and the resistance encountered.

The ureteral catheter and x-ray are valuable contributions by the urologist in substantiating the diagnosis and determining the character of the injury. A cystoscopy with ureteral catheterization and functional tests should be utilized wherever possible.

The passage of bloody urine is the most characteristic symptom of ruptured kidney. Blood occurs in over 90 per cent of cases. However, there may be an absence of blood cells in the urine; when merely the fatty or fibrous capsule is torn, without actual injury to the kidney parenchyma. On the other hand, in some cases, the only symptom directing attention to the kidney may be hematuria.

Very often blood is found in the urine when the kidney is not ruptured. In Doctor Beach's series, Case 7, the presence of red blood cells in the urine was the decisive factor in differentiation from an appendicitis.

However, very recently I examined a patient with numerous blood cells in the urine, with pain and rigidity over the right iliac fossa. On account of the localization of the muscular rigidity, the patient was operated upon for appendicitis. A pathological appendix was removed, which was followed by a disappearance of erythrocytes from the urine.

Of extreme diagnostic importance in renal rupture are the presence of muscular rigidity of the rectus on the affected side and a relatively increased resistance with marked tenderness below the costal arch.

To my mind, the treatment as formulated by Doctor Beach is ideal. Conservatism is the watchword. When bleeding is profuse, surgical intervention is indicated. An exploratory operation should be performed; but the operator must continually keep in mind that the extent and form of the surgery shall depend upon the amount of pathology present and the ease with which the bleeding can be arrested: by ligation, suture, or packs. Complete nephrectomy is often essential. When indicated, it should be carried out with rapidity.

Watson considers hemorrhage as the cause of death in eighty out of a total of 190 cases. Of the remaining, he attributes four deaths to septic complications, thirty-four to anuria, and eleven to shock.

Güterbock claims that in thirteen cases of nephrectomy performed on account of dangerous hemorrhage, only four died.

The mortality in septic cases can be directly traced to delayed operative procedure.

DOCTOR BEACH (Closing).—It seems to me that a careful urological survey in these cases is essential to determine exactly the position, extent and degree of injury to the kidney.

After having made a diagnosis, the treatment must be adjusted to the circumstances.

To conserve whenever possible, is the parting thought I wish to leave with you.

PYOCYANIC ANGINA—WITH AGRANULOCYTOSIS*

REPORT OF CASES

By MADISON J. KEENEY, M. D.
Los Angeles

DISCUSSION *by Fred Linthicum, M. D., Los Angeles; John V. Barrow, M. D., Los Angeles; Ernest H. Falconer, M. D., San Francisco.*

THE title of this paper is possibly not scientifically accurate, but is used to call attention to some points of interest in a symptom complex about which much has been written in the past few years.

Schultz [1] of Berlin, in 1922, reported a group of cases in which the outstanding findings included a severe membranous or necrotic angina, with an unusual and distinctive blood picture and to which he gave the name "agranulocytic angina," or "agranulocytosis." Two cases of the type he described have come under my observation in the past few months. One of the case reports is here submitted.

REPORT OF CASE

Mrs. C., age forty-seven, married, housewife. First seen for present illness at her residence the evening of November 13, 1928, at which time she complained of a sore throat and general aching, which had developed that morning.

This patient had been under my observation at times for the preceding two years. In December, 1927 she was given a general physical examination because of a subacute arthritis. Nothing abnormal was found except several apical abscesses and extraction of offending teeth gave some relief. At this time the blood count showed a normal red blood picture with white blood cell count of 7000, with a normal differential, platelets plentiful, and a negative blood Wassermann.

On August 15, 1928, she appeared at my office complaining of symptoms referable to the lower bowel. Examination disclosed a small carcinoma of the rectum. Early in September she was operated upon for the carcinoma at a midwest clinic and returned to her home the first week in October in good general condition. Blood count made at the clinic showed red blood cells to be 4,700,000 and white blood cells to be 6000.

At the time of my first visit for the present illness, November 12, her symptoms were those common to the beginning of many acute infections and examination showed a red, angry-looking throat with some swelling but no exudate or ulceration. Twenty-four hours later a patch of grayish membrane appeared on the right tonsil, with swelling and some edema of entire throat and slight enlargement of the cervical glands. Temperature was 103 degrees F., and pulse was 110. The patient was evidently seriously ill and complained particularly of the presence of large amounts of sticky, stringy mucus in her mouth. Cultures were made from the throat at this time and sent to the city health department laboratory and a positive report for diphtheria was returned.

Necrotic exudate soon appeared on the other tonsil, the throat became badly swollen and small deposits of exudate appeared on the gums. Cultures and smears were again made from the throat and sent to the city health department laboratory and also to a private laboratory, as it was not believed we were dealing with diphtheria, for my first impression was that the case was one of the so-called septic sore throats. Report from the city laboratory on second culture was again positive for diphtheria bacilli.

Report from the private laboratory was as follows:

"Gram stain of smear showed a few epithelial cells, numerous Gram-negative bacilli, a moderate number of fusiform bacilli, and a few spirilla. Loeffler's blood serum slant showed a growth of a Gram-negative bacillus which produced a greenish discoloration of the media. Smear of growth stained with Albert's stain showed numerous bipolar staining bacilli resembling diphtheria bacilli. Gram stain showed the organism to be Gram-negative bacillus. Bacillus pyocyaneus."

A blood count made at this time showed a total white count of 200 cells, all of which were lymphocytes, approximately 4,000,000 red cells, and platelets plentiful. There was no tendency to bleeding from any mucous membrane, no petechia or other eruption. Spleen and liver were not definitely enlarged and there was no swelling of glands other than the cervicals. On the third day of the illness she developed a definite jaundice, and urine showed heavy bile as well as albumin and numerous casts. Early in the fourth day of the illness, signs of rapidly failing heart appeared, with cyanosis and râles in both bases. The patient died that afternoon. A postmortem was not permitted.

COMMENT

This is a somewhat incomplete report of a typical case of agranulocytic angina, occurring in a middle-aged woman. Schultz and his associates believe this condition to be a definite clinical entity. In a paper in 1925 Schultz, Wiener, and Jacobwitz [2] reviewed twenty cases which had been reported up to that time and outlined the characteristic findings as follows:

"The disease attacks both sexes and all ages, but most of the typical cases have been in middle-aged women in whom there was no evidence of abnormality or lowered resistance. Onset sudden, with high fever, toxemia and prostration; the duration of the disease very short and the death rate extremely high. Membranous and necrotic inflammations of the throat, especially the tonsils, were present, and in some of the severe cases there were ulcerations of the mucous membranes of the mouth, rectum, and genitals. Normal bleeding time and clot behavior, with absence of hemorrhagic diathesis, were characteristic findings. Clinically there was slight, if any, enlargement of spleen and liver, no general enlargement of lymph glands, and jaundice was present in more than half the cases.

"The blood findings were striking—a high-grade leukopenia—a total white count usually below 1000, often only a few hundred, and granulocytes extremely low or entirely absent. The few white cells remaining were practically all lymphocytes without the presence

* Read before the General Medicine Section of the California Medical Association at the fifty-eighth annual session at Coronado, May 6-9, 1929.

of immature cells, and there was little change in the red cell or platelet picture."

Bacteriologic findings from cases reported have not been uniform or convincing—a variety of organisms having been cultured from the throat and blood, blood cultures usually giving no growth. There has been no evidence of any contagious or epidemic element.

Postmortem findings show a bone marrow extremely poor in granular elements, with little damage to red cell and platelet structure and no evidence of leukemic metaplasia. Sections of lymph glands, liver, and spleen show the changes common to many infectious diseases and are not suggestive of leukemia, and the spleen is not the typical septic organ. In the tissue surrounding the local lesions of the mucous membranes there is a striking absence of the usual cellular infiltration.

From findings such as the above, Schultz and a number of more recent writers believe this to be a definite disease, either with primary localization in the throat and a virulent toxemia which destroys the white cells of the blood and attacks the bone marrow, or a general infection, with a secondary necrosis of mucous membranes.

DIVERGENT OPINIONS FROM THE LITERATURE

Many case reports and extensive reviews on recorded cases have appeared in the past few years. Study of a large number of these shows a marked difference of opinion as to whether or not this should be classed as a definite disease and also convinces one that many of the cases reported as agranulocytosis do not belong in that classification, but are instances of other conditions associated with a leukopenia and a relative lymphocytosis.

Some believe the disease has a background of a blood or bone marrow dyscrasia and that the agranulocytic angina is a terminal condition. Against this view is the fact that a number of the cases have occurred in persons known to be otherwise normal and in the few cases that have recovered the blood picture has returned to normal.

Leon believes the cases belong to the leukemias, but the autopsy findings have shown this to be erroneous. A number of writers who state the condition is not a clinical entity believe it is an atypical sepsis and should be classified with the septicemias.

Marchand,[3] Turk,[4] and others have described cases of sepsis with granulocytic leukopenia and relative lymphocytosis accompanied by necrosis of the mucous membrane of the mouth. These patients, however, showed the hemorrhagic diathesis with thrombopenia and a secondary anemia. In most of them the focus of infection and abscesses were found, the blood culture was positive, and autopsy disclosed a septic spleen.

DIFFERENTIAL DIAGNOSIS

Freer[5] states that septicemias are seen with marked leukopenia and ulceration of mucous membranes, without anemia, hemorrhagic diathesis, or evident focus of infection and with negative blood cultures. He believes so-called agranulocytosis belongs with them and should be called sepsis agranulocytotica. Cases such as he describes would certainly be hard to differentiate from agranulocytosis, but one wonders in which classification they belong.

Clinically acute leukemia in the aleukemic stage may resemble agranulocytosis very closely, but the hemorrhagic diathesis, anemia, pallor, and other changes which are present in leukemia should serve to make the diagnosis; and in most cases the blood smear is sufficient.

Aplastic anemias in the terminal stage may simulate the condition, but the blood picture, symptoms and history will usually differentiate, and typical acute cases of agranulocytosis certainly are not terminal infections.

Diphtheria of the malignant type resembles it very closely, except for the blood findings, and has been the original diagnosis in many of the cases. Errors of diagnosis from the throat cultures have been made many times and blood counts should be made in all acute throat infections.

The throat lesions of Vincent's angina resemble those of agranulocytosis, but the lack of severe general symptoms, the blood examination, and throat smears will make the diagnosis, although mild leukopenia has been observed with Vincent's.

Infectious mononucleosis (glandular fever) has some things in common, but the blood picture is different and the course of the disease favorable. Infectious mononucleosis because of the lymphocytosis is more likely to be confused with acute lymphatic leukemia, and observation for a period of time may be required to make the differential diagnosis.

Marked leukopenia (granulocytic) with relative lymphocytosis occurs in arsenic and benzol poisoning; at times following administration of arsphenamin, occasionally after x-ray treatment, and in Banti's disease. Moderate leukopenia with relative lymphocytosis has been noted in a number of diseases, among them typhoid, influenza, certain cases of tuberculosis, intestinal parasitism, and often in the readjustment of the blood following leukocytosis in various acute infections.

The bacteriology of agranulocytosis is not solved. Cultures from the throat have shown all the pyogenic cocci, pneumococci, *Bacillus pyocyaneus,* and others. Blood cultures have been unsuccessful in most of the cases and the positive ones have shown streptococci and staphylococci, *Bacillus pyocyaneus* and *Bacillus coli.*

The *Bacillus pyocyaneus* has been cultured from the throat from several of the cases and from the blood in two or three patients. Lovett,[6] in 1924, cultured the *Bacillus pyocyaneus* from the tissues of a patient after death and produced a similar blood picture in guinea-pigs by injections of cultures of the organisms into the peritoneal cavity. That the *Bacillus pyocyaneus* is a pathogenic organism of more importance than was formerly believed there can be no doubt, but that it is the

causative agent in this disease is still unproved. Degenerated forms of the *Bacillus pyocyaneus* may be mistaken for the diphtheria bacillus, but are readily differentiated, the *Bacillus pyocyaneus* being Gram-negative.

Dr. F. Linthicum of Los Angeles, who was of definite assistance in the diagnosis of the case here reported, has had some interesting experiences with this disease and has noted a possible association with the *Bacillus pyocyaneus*.

SUMMARY

A case of agranulocytic angina is reported in which a laboratory diagnosis of diphtheria was made from the throat cultures. Further study proved the organisms in the cultures to be the *Bacillus pyocyaneus* and the blood picture typical of agranulocytosis.

The symptomatology and pathological findings in agranulocytosis are fairly constant, but the etiology is obscure.

The typical acute cases suggest a specific infection localized in the throat or mouth, causing a membranous and necrotic inflammation, with the production of a virulent toxin which destroys the leukocytes of the blood and bone marrow.

The organism or organisms responsible for the condition have not been identified. In the case here reported, as well as several others, the *Bacillus pyocyaneus* was obtained in the culture, but it is not claimed that it has been shown to be the offending organism.

Evidence at present is possibly still too insufficient to classify the symptom complex as a definite clinical entity, but the cases have a very strong family resemblance and the clinical picture of the acute cases is a definite one.

For purposes of study it seems advisable to classify the syndrome as a definite clinical entity, agranulocytic angina.

834 Pacific Mutual Building.

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DISCUSSION

FRED LINTHICUM, M. D. (901 Pacific Mutual Building, Los Angeles).—One point in Doctor Keeney's paper I do not think has been sufficiently stressed, and that is the odium to which a physician exposes himself who has under his care a case of ulcerated sore throat and accepts from a public laboratory the routine identification of the diphtheria bacillus. It was my misfortune two years ago to encounter just such an incident as Doctor Keeney has described—a case of pyocyanic angina. Prior to this time there had been two similar cases in Germany and one in this country, the latter described by Lovett in 1924. Briefly, we were called in consultation on a woman who had a sore throat. There was a small, grayish patch on the right tonsil. Her temperature was not alarming. During the following week the condition progressed until her entire buccal cavity was lined with a thick gray membrane, with fibrinous bands extending from the gums to the inner aspects of the cheek. She died on the eleventh day of her illness apparently of cardiac failure. Autopsy was of little or no help in establishing a diagnosis. Numerous consultants had been called and on the evidence of a moderate number of fusiform bacilli and spirochetes a diagnosis of Vincent's angina was accepted as the cause of death.

Near the terminal stages a piece of the membrane had been sent for examination. This had been preserved. A postmortem examination of this membrane revealed the presence of numerous bipolar staining organisms, which were identified as the Klebs-Loeffler organism. We thus assumed the responsibility of having allowed a patient to die of diphtheria unrecognized and untreated. Fortunately another examination was made and the bipolar organism was found to be Gram-negative instead of Gram-positive. Further delving revealed a picture of agranulocytic angina associated with the ***Bacillus pyocyaneus,*** which organism is not only Gram-negative but is actively motile in the suspended drop. The organism from this case was isolated—injected into a series of guinea-pigs, and it was found that until it became attenuated it had the power to reproduce in experimental animals a blood picture similar to that which you have just heard described. In animal No. 7 a half agar slant of the growth was introduced subcutaneously and it was found that at the end of twenty-seven hours the polymorphonuclears had dropped to six per cent; the lymphocytes had risen to 94 per cent. The animal died, and at postmortem the organism was recovered in pure culture from the throat. The ***B. coli communis*** was found to produce the same blood picture with the exception that it was not quite so virulent.

To date, Doctor Keeney's patient is the sixth recorded instance in which this disease has been associated with the ***Bacillus pyocyaneus.*** It is probably not the primary etiological factor in the picture. It is always a possibility. Given a case of ulcerative pharyngitis or stomatitis in which the prognosis becomes grave, one should always endeavor to protect himself by insisting upon an accurate differentiation between the ***Bacillus pyocyaneus*** and the Klebs-Loeffler bacillus.

JOHN V. BARROW, M. D. (1930 Wilshire Boulevard, Los Angeles).—We are indebted to Doctor Keeney for his careful review of the history of this syndrome. He has brought down to date the symptomatology, pathology, etiology, and the treatment of this comparatively new, rare, and fatal malady.

I have had the misfortune to see five cases in the last two or three years. Each of them has had symptoms referable to an acute sepsis superimposed on some depleting chronic condition. Cultures from the blood of these patients have been variable. A staphylococcus in one and a streptococcus in a second have been present in the blood, but we could not prove that this was the causative organism. The blood picture in most of these has shown a tendency to a lowered leukocyte count well within the range of five to seven thousand. The red cell count did not seem to be disturbed beyond the ordinary clinical manifestation of the case. There seemed to be a distinct inception of the disease, as shown by its symptomatology of throat pain and nasal distress. Three of these cases had almost putrid throats, similar to Vincent's angina or streptococcus.

The decrease in the number of the granulocytes is spectacular. It does not seem to be connected with the chronic level of a leukopenia. The latest case to come under my observation had two attacks with an interval of nearly two months between. At the beginning of the second attack the granulocytes had returned to between four and five thousand and remained up to three thousand until the day after the symptoms seemed acute, at which time they dropped suddenly to eight hundred, two hundred, and then disappeared. This patient had all the treatment, including x-ray treatment, leukocytic extract, and every other remedial agent calculated to be a benefit in such conditions. Nothing was accomplished by treatment except the comfort of the patient.

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ERNEST H. FALCONER, M. D. (384 Post Street, San Francisco).—The pathology and possible etiological agents have been well discussed by the author, but a few remarks about therapeutic procedures might be of interest.

In cases where the question of diphtheria is in the foreground and while awaiting a blood count and bacteriological confirmation, it is permissible to give diphtheria antitoxin if there is no reason to suspect sensitization. This antitoxin has been used therapeutically, and cases so treated have been reported. Also some improvement has apparently occurred after the use of large transfusions. These transfusions may be preceded by acroflavin intravenously. Considerable interest attaches to the use of leukocytic extract, in large doses, as this should be of value on theoretical grounds. I have seen one case where this material has been used over a considerable period of time. This woman is still alive after more than one year and during this period she has passed through one serious relapse. Polyvalent antistreptococcus serum has been used and also x-ray application over the spleen and long bones.

It is of particular interest and of value from the prognostic standpoint to know that there are cases with apparent recovery followed by one or several relapses. Also that there are certain cases of a more chronic type that live for from three to six months to end with a terminal picture of marrow aplasia similar to aplastic anemia.

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DOCTOR KEENEY (Closing).—The results of treatment in agranulocytosis have not been encouraging. In the case here reported diphtheria antitoxin was given—somewhat as a protective procedure, the residence having been promptly quarantined for diphtheria following the first culture report.

Diphtheria antitoxin has been administered in many of the cases—usually early—before the condition was recognized.

There have been published reports of recovery of a few typical acute cases and a number of subacute and atypical ones.

Blood transfusion, x-ray of long bones, leukocytic extract, intravenous injection of acridin dyes and of guanidin hydrochlorid have been tried. Of these, stimulating irradiation of long bones has been credited with several recoveries.

Dr. H. Zeiler, as consulting pathologist, has had contact with most of the patients seen in Los Angeles—some twenty in all. Of these only two are living and there is some question of the diagnosis in one of the two. X-ray of long bones was used in the proved case which recovered, but was employed in a number of others without benefit. Blood transfusions were given to more than half of the twenty cases, leukocytic extract to three, guanidin hydrochlorid to four, and combinations of above procedures to many of them.

The death rate in typical acute cases under all methods of treatment is very high, probably above 90 per cent.

THE BUSINESS OF MEDICINE*

By REXWALD BROWN, M. D.
Santa Barbara

LONG before the era of Christianity the medical profession hitched its destinies to a code of procedure which has retarded its thought. The Hippocratic code, a superb guide for moral conduct between physician and patient, has created an attitude of mind generally accepted by the profession and by the public through a period of many centuries.

This unquestioned attitude is that the relationship between a doctor and a sick person is distinctly individual and has only a remote or indirect bearing on society. In this spirit medicine has pursued its course under a mantle of tradition. Beneath the mantle there has grown a structure of insularism, detachment from movements in other spheres of human endeavor, reticences, customs, regulations and misinterpretations of the code.

Civilization is not static. New combinations and new relationships push hard on the heels of the old. Mental alignments held unbreakable are pushed asunder by a public demanding answers to fair questions. Organized medicine is being challenged to justify its economic position in the body politic. And who is there to answer the question?

What effort has medicine made to fit its program, if it has any, into the programs of other social forces? Did Hippocrates intend his code to be a document governing the activities of the medical profession for all time?

INDIVIDUALISTIC ECONOMICS CHAOTIC CONFUSION

Does medicine believe that its system of individualistic economics is other than chaotic confusion? Are today's medical economics satisfactory to medicine and to society? If so, why are there so many heated, perplexing, endless and inconclusive discussions within and without the profession and arguments pro and con about physicians' and surgeons' fees, hospital costs, nursing expenses, charity care, contract practice, social insurance, dispensary development and abuse, et cetera?

The facts are that unless medicine revises its educational structure and teaches those subjects which will enable medicine to make adjustment with the whole modern economic scheme the profession will, as a class, be subject to lay domination. The position of many medical men in big industry is already that of subordination.

Medicine's real purpose should be the building of a statesmanlike leadership toward mankind's full comprehension of the dependence of social progress on individual and national health.

* Read before the General Medicine Section of the California Medical Association at the fifty-ninth annual session, Del Monte, April 28 to May 1, 1930.

* Ed. Note: This article by Doctor Brown of Santa Barbara, and the reports by Doctor Graves of San Francisco and Doctor Ruddock of Los Angeles, which are printed in this issue, were presented at the recent annual session of the California Medical Association at Del Monte. The papers deal with matters of vital importance to the medical profession and should be of special interest to those readers who have been following the discussions on these subjects in lay and medical publications.

One of the outgrowths of the Hippocratic idea is medical altruism. Mankind credits the medical profession, as it credits the clergy, with the possession of higher spiritual attributes than other callings. (The present intense feelings about the cost of medical care have probably greatly modified this opinion.) This has led to a conviction that physicians have no adequate concepts of business matters and that it is not wise to entrust them with control and expenditure of money in the advancement of projects intimately concerned with the welfare of society and of medicine.

PHYSICIANS NOT A CLASS APART

Does medical altruism mean that physicians should be indifferent to fundamental truths of economics as they exist in the social fabric? Physicians are not and should not be a class apart from other people. They are enmeshed in the economic exactions of life and should be conceded in all fairness the right to make from their efforts in behalf of individuals and of society a living commensurate with livings secured in other vocations.

Scientific medicine is derelict in not establishing an economic bureau in its organization. Business, finance, industry, education and religion are continuously adjusting their activities to the shifting phases of economic existence. Large personnels carry on such work.

Medicine must create within its own ranks a system which the present day type of individualistic practice and opinion does not possess. There is a business in medicine which the profession has not recognized.

This business is the distribution of all medical knowledge at costs which can be met without burden by all classes, or at costs which society should pay. To the development of this business all physicians must contribute. In a constructive way cohesive organization in medicine does not really exist. We are proud of our medical associations. They are interested largely, however, in keeping members conversant with advances made in clinical and research fields. The associations exist for mutual improvement.

A sound economic status in civilization is medicine's immediate problem. There must be found a way by which society and the healing science will coördinate their activities without detriment to either one.

ORGANIZED EFFORT ROAD TO PROGRESS

Organized effort is the road to progress in this period of the world's growth. The awakening of medicine to this mental concept, a drastic break almost impossible of acceptance by many doctors, steeped in the traditions of individual relationships, should readily follow the creation of a medical economic bureau.

Of what permanent value will be the economic fact findings which are to emanate from the Committee on the Cost of Medical Care? This admirable committee under the direction of the broad calibered thinker, Dr. Ray Lyman Wilbur, is very busy. Five years will elapse before the report is made. Who is to receive the report and who is to continue the surveys and analyses in an evolving civilization? Who is to formulate the financial policies to which the aggregate profession is likely to subscribe and to follow?

ECONOMIC BUREAU OF NON-PRACTICING PHYSICIANS

The medical economic bureau should be composed of non-practicing physicians. What folly to assume there are no physicians possessing judicial temperaments and capable of understanding the broad scope of general economics! There are physicians who would be glad to be freed from the exacting grind of routine practice to devote their energies to the promotion of a fair medical economic status approved of by society.

There are hundreds of meetings of county, state, special and national medical societies throughout the year. The time is consumed almost entirely by discussions of scientific data. Very seldom is there discussion of vital subjects in relation to practice of medicine. Physicians talk about these matters to each other outside the meetings. Is medicine bereft of ability to make decisions en masse on politico- and socio-medical participations as it has ability to make mass decisions on the proper management of appendicitis, typhoid fever and toxic goiter?

A profoundly different social order has grown into being while a nonunified medical profession has carried on in an ancient way without recognition of the change. Medicine is confused in a world insistent on adjustments. It must turn quickly to the development of a machinery which shall hasten understanding of the leading position of medical science in the march of society to higher levels.

The rank and file of physicians waits upon the American Medical Association to take the first steps toward this end. Economic, organization and administrative departments with trained executive personnels are necessary to manage and conduct the enlarging activities of the medical profession. Is there reason to believe that men of medicine have no capacity for initiative thought in organization affairs and have no ability to become administrators in medical development programs?

REVISION OF MEDICAL EDUCATION

The system of medical education must be revised. Certain students versed in the fundamentals of medical knowledge and conversant with the profession's high aims will manifest inclinations toward medical administrative careers. Their desires should be fostered in postgraduate schools of administration. Graduates from these schools will surely be able to assume those medical administrative functions now illogically entrusted to lay people, to nurses and to social workers.

One phase of medical experience about which the public is greatly exercised is the expense of service in hospitals. The workshops of physicians, with isolated exceptions, have in control and direction been almost entirely divorced from the medical profession. Hospital policies have become pet projects of lay philanthropists and

politicians. No one questions that philanthropists are actuated by the highest forms of benevolent thought. Many politicians, too, have high motives, but the petty play of politics often hinders their efforts.

The training of philanthropists and politicians has not likely been such as to qualify them to guide the destinies of hospitals. Hospital needs and growth consistent with modern medical knowledge is best appreciated by medical men. The management of hospitals is one outstanding field for medical administration.

There is a definite drift toward the endowment of hospitals by wealthy individuals. The desirability of this form of munificence reaches deeply into the heart of medical economics and should be given careful study. If with the gift of great moneys there is associated on the part of the givers an effort to control the expenditures, for instance, to insist on closed hospital staffs, the ultimate results might be inimical to medicine's ability to express itself as a unit in society's evolution.

ADVANCEMENT OF SPECIFIC PROGRAMS

If medicine is able to advance specific programs, as educators have in their spheres, regarding the necessity for and worth of endowment funds in the promotion of health, men of wealth should find it easy to contribute of their excess means to these programs. They would gladly permit the expenditures to be directed by medicine and medicine in turn would be happy to render strict business accountings for the moneys entrusted to its use. Along such lines philanthropy and medicine can be powerful partners in the moulding of society's future.

The sick who enter hospitals are divided roughly into three classes: the indigent, those of means, and those of limited means. Almost all hospitals permit the reception of patients from all three classes. This creates many economic and psychic difficulties which are by no means ironed out. The matter of hospital expense to the wealthy is not of much moment, as wealth is always able to pay for the surroundings and the care it demands. There would be no economic problem for the profession if all people were wealthy.

ECONOMIC POSITION IN CHARITY RELATIONSHIPS

The free service by the medical profession to the indigent sick in all hospitals and in the dispensary clinics attached thereto has raised the cost of medical services to the self-respecting individuals in moderate circumstances who are too proud to accept charity when they are ill. The profession has no economic position at all in its charity relationships. It permits itself to be exploited by society in its efforts to demonstrate its self-builded philanthropic but obviously uneconomic spirit.

Deep undetermined causes are responsible for the indigent sick. The medical profession has not brought their afflictions upon them; yet it feels a deep desire to, and does render them, the professional attentions to which any human is entitled. Society does little for the indigent sick except to give housing and food in hospitals and exact of doctors their medical care. Doctors fight for the privilege of caring for them. Positions are sought on city and county hospital staffs as they are assumed to give prestige and opportunities for acquisition of knowledge which will later be financially valuable in private practice.

All efforts, particularly political, are made to hold the staff appointments. It is known that scores of physicians seek the shoes of a member dismissed or resigned. The picture is a sad one. Does any other class consider it of sound economic value to society to work gratuitously for the indigent sick? Do architects and contractors build their hospitals, do grocers supply them food and clothiers give them garments without compensation? Do hospital superintendents, nurses, technicians, welfare workers and lay help in charity hospitals donate their services?

The medical profession, the most important factor in the whole program of the care of the indigent sick and without whose knowledge and service the entire structure would fall, goes on blindly. This is a medical economic weakness which until corrected makes impossible the building of a general economic basis compatible with the sound securities found essential in the development of activities in other fields of human endeavor.

Physicians should be rendered fair financial returns for their mass charitable services. When society and medicine appreciate this truth, great changes in the conduct of charity hospitals will occur leading to financial savings even though physicians are paid. The tremendous abuses of medical charity could be controlled. Social reformers and welfare workers certainly play a large part in assisting people who could pay small fees for medical attention to become wards of the tax paying community. Whether or not payment to doctors by society is an approach to state medicine is debatable. Surely if medicine judges remuneration fair in a sound economic system, it would not be state medicine which carried to logical conclusion, means the employment of physicians on terms dictated by lay people.

The record of the medical profession in the understanding of the white collar class medical problem and helpfulness in its solution is relatively negligible. Unquestionably the matter is a baffling one. There are a number of experimental efforts being made by a few socially minded doctors, hospitals and foundations to meet the needs. They have not gone far nor is it known that their efforts are in the right direction.

A solution worked out in this economic field will be one of the highest services which medical science can render to society. For this purpose, if for no other, must physicians create an economic bureau. This is business of medicine. It is a responsibility and a duty. A group consciousness to promote real altruism with its foundation in sound economics is a goal which can weather criticism.

Santa Barbara Clinic.

THE LURE OF MEDICAL HISTORY

SIXTEENTH CENTURY GERMAN MEDICINE*

ARTZNEYBUCH OF HOFMEDICUS GÄBELTHOUER

PART I

By S. L. Millard Rosenberg, Ph.D.
Los Angeles

IN the year 1596, from the press of Georgen at Tübingen (an old university town of Württemberg) there was published, at Gruppenbach, the *Artzneybuch* (Book of Medicines) compiled by Oswaldt Gäbelthouer, the Hofmedicus (court physician) of the Duke of Württemberg and Theck. The elaborate and illuminated title states that the work contains "remedies for practically all the ills of the human body." Some of the prescriptions, chosen almost at random from dozens of similar ones, are given below, so that the reader may gather some faint notion of the state of medicine as practiced at a ducal court three hundred—only three hundred—years ago, shortly before Harvey's discovery and about equally subsequent to Vesalius, Fallopius, the French surgeon Paré, and other pioneers of modern medicine.

Before outlining the work itself, a few words about the copy from which excerpts are made for this article. It is worm-eaten and minus one of the clasps. There are several inscriptions on the fly-leaves, and every indication that the book was much used and was not an antique in its time, but quite up to date in that corner of Europe—more's the wonder when we read it. The German of it is not easy reading for a

* During the last summer, Professor S. L. Millard Rosenberg of the University of California at Los Angeles spent some time in Germany and there purchased several interesting volumes for the editor of California and Western Medicine. One of these is the copy of Oswaldt Gäbelthouer's "Artzneybuch," which was printed in the year 1596. This book is made the subject of this sketch. The book was written in sixteenth century German and presented many difficulties in translation. In the light of modern scientific medicine many of the prescriptions of three hundred and fifty years ago which are given in its pages are more than absurd, although here and there is found something no worse than some popular lay remedies of the present day. Some of the prescriptions also show how tenacious are the traditions of folklore medicine, since in modified form the basic ingredients are still used among certain modern peoples. This work of Gäbelthouer, who in one place in the text states he has used a certain prescription for forty-nine years, also shows to what a low state of empiricism the practice of the healing art had fallen in the sixteenth century. Brackets are used after some of the prescriptions to indicate comments by Professor Rosenberg, to whom the editor is much indebted for these translations, which are as literal as possible, and which even though they give somewhat of a shock to present-day readers, are not without value since they provide a comparison between sixteenth and twentieth century medicine. In connection with this sketch by Professor Rosenberg, the attention of readers of California and Western Medicine who are interested in the history of medicine is called to the recent book "Devils, Drugs and Doctors" by Howard W. Haggard, M. D., of Yale University, and which contains a fascinating portrayal of the development of medicine, worthy of perusal by all members of the medical profession.—G. H. K.

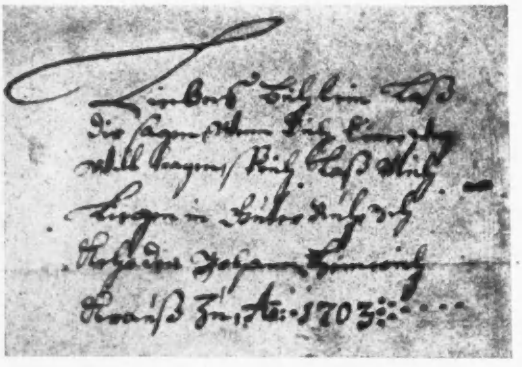
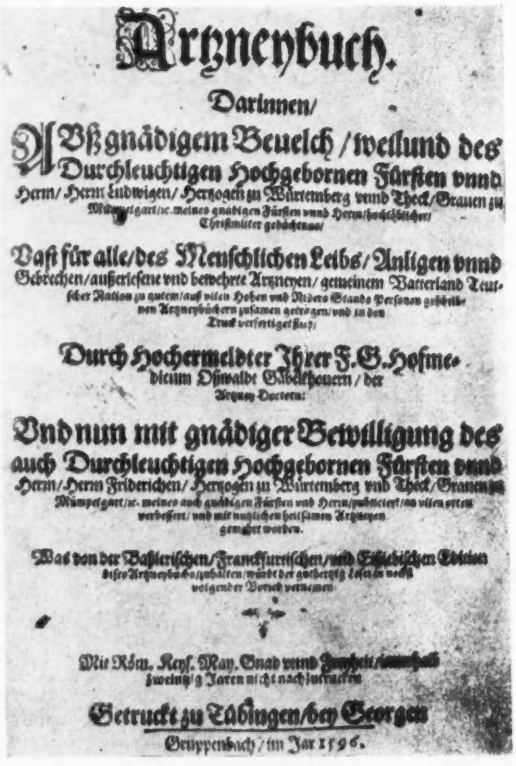


Fig. 2.—Inscription on Fly Leaf. Translation follows:
Give heed, dear Book, and let me say:
If one should carry you away,
Cry out: "Let Be! And get out of this house!
For I belong to Johann Heinrich Strauss."
A. D. 1703.



Artzneybuch.

Darinnen/

Ob Bß gnädigem Beuelch / weilund des Durchleuchtigen Hochgebornen Fürsten vnnd Herrn/ Herrn Ludwigen/ Hertzogen zu Würtemberg vnnd Theck/ Grauen zu Mümpelgart/ etc. meines gnädigen Fürsten vnnd Herrn/ hochlöblicher/ Christmilter gedächtnus/

Vast für alle/ des Menschlichen Leibs/ Anligen vnnd Gebrechen/ außerlesene vnd bewehrte Artzneyen/ gemeinem Vatterland Teutscher Nation zu gutem/ auf vilen Hohen vnd Nidern Stands Personen gestellten Artzneybüchern zusamen getragen/ vnd in den Truck verfertiget ist:

Durch Hochermelder Ihrer F. G. Hofmedicum Oßwaldt Gäbelthouern / der Artzney Doctorn:

Vnd nun mit gnädiger Bewilligung des auch Durchleuchtigen Hochgebornen Fürsten vnnd Herrn/ Herrn Friderichen/ Hertzogen zu Würtemberg vnd Theck/ Grauen zu Mümpelgart/ etc. meines auch gnädigen Fürsten vnd Herrn/ publiciert/ an vilen orten verbessert/ vnd mit nutzlichen heilsamen Artzneyen gemehrt worden.

Was von der Baßlerischen/ Franckfurtischen/ vnd Eißlebischen Edition diser Artzneybücher zuhalten/ wirdt der gutherzig Leser in nachfolgender Vorred vernemen.

Mit Röm. Kayſ. May. Gnad vnnd Freyheit/ nachzudrucken zweintzig Jaren nicht nachzutrucken.

Getruckt zu Tübingen/ bey Georgen Gruppenbach/ im Jar 1596.

Fig. 1.—Title Page. Translation follows:

BOOK OF MEDICINE WHEREIN

at the gracious command of His Highness our most praiseworthy erstwhile Lord and Master Ludwig, late Duke of Württemberg and Theck, Count of Mümpelgart, etc., and to commemorate his Right Honorable name have been collected

choice and proved medicines for the cure of almost all human ailments and infirmities, for the good of our Fatherland, the German Nation, of every person of high and low degree. Compiled from sundry medicine books prepared for the printer,

by the illustriously appointed Court Physician
Oswaldt Gäbelthouer, doctor of medicine,

and now set forth

with the additional gracious permission of His Highness our present Master and Sovereign, Friderich, Duke of Württemberg and Theck, Count of Mümpelgart, etc.

And published in a new, amended and enlarged edition with new, useful and curative prescriptions.

What consideration to give to the editions of Basel, Frankfurt, and Eissleben the kindly reader will see fully set forth in the Preface of the present work.

By Roman Imperial Grant.

Unsanctioned printing of the within book is hereby prohibited for the period of twenty years, at the peril of forfeiture of grace and freedom.

Printed by Georg at Tübingen
Gruppenbach
1596

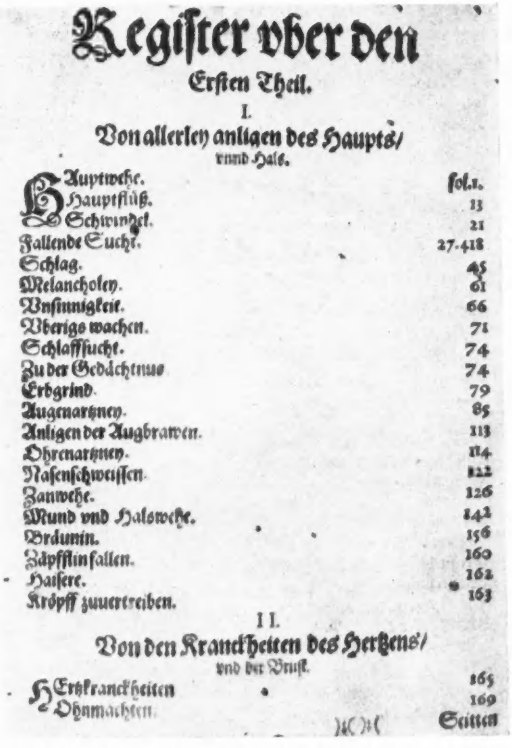
modern unless familiar with the dialect peculiarities of sixteenth century Württemberg.

But one of the inscriptions is in modern German; it is in ink in German script, on the second front fly-leaf:

Liebes Büchlein lass Dir sagen,
Wenn Dich einer weg will tragen,
Sprich: Lass mich liegen in guter Ruh,
Ich folge dem Johann Heinrich Strauss zu.
Anno 1703.

Which means something like this:

Give heed, dear Book, and let me say:
If one should carry you away,
Cry out: "Let be! and get out of this house!
For I belong to Johann Heinrich Strauss."
Anno 1703.



Register vber den
Ersten Theil.

I.

Von allerley anligen des Haupts/
vnnd Hals.

	fol.
Hauptwehe.	
Hauptflüß.	13
Schwindel.	21
Fallende Sucht.	27.418
Schlag.	45
Melancholey.	61
Vnsinnigkeit.	66
Vberigs wachen.	71
Schlafftucht.	74
Zu der Gedächtnus	74
Erbgrind.	79
Augenartzney.	85
Anligen der Augbrawen.	113
Ohrenartzney.	114
Nasenschweissen.	122
Zanwehe.	126
Mund vnd Halswehe.	142
Brdumin.	156
Zäpfflin fallen.	160
Haisere.	162
Kröpff zuuertreiben.	163

II.

Von den Kranckheiten des Hertzens/
vnd der Brust.

Hertzkranckheiten	165
Ohnmachten	169

Seiten

Fig. 3.—A page from the Table of Contents. Translation follows:

REGISTER OF THE FIRST PART

I

OF EVERY KIND OF AILMENT OF THE HEAD AND NECK

	Page
Pains of the head	1
Rheum [catarrh] of the head	13
Dizziness	21
Falling sickness [epilepsy]	27, 418
Apoplexy	45
Melancholy	61
Insanity	66
Insomnia	71
Somnolency [stupor]	74
Failure of memory	74
Scald-head	79
Eye medicaments	85
Eyebrow ailments	113
Ear medicaments	114
Discharges from the nose	122
Toothache	126
Teeth and throat troubles	142
Quinsy	156
Ailments of the uvula	160
Hoarseness	162
Goitre remedies	163

II

OF MALADIES OF THE HEART AND CHEST

Heart troubles	165
Fainting spells	169

This same Strauss, two years before this doggerel, in 1701, wrote his name on one of the back fly-leaves, with elaborate embellishments of scrolls and flourishes. Below, in a different hand, and in the year of the doggerel, someone—who had not the courage to sign his sneer—wrote: "Wer das geschrieben hat, ist ein Schelm von Haus aus. Anno 1703." That is to say: "The writer of this is a born rogue." Perhaps, but he was not a secretive person, for he signed his name, and proudly added flourishes.

There are several earlier inscriptions, giving medical recipes of the type contained in the book, and applying particularly to sick dogs. One of them prescribed, for all canine ills, a cake of sour cheese, milk, and honey; this was guaranteed infallible, no matter what ailed the dog. George Meier is the name of this contributor, but the date is missing. One leaves this prescription for dogs (which is in script on one of the fly-leaves) somewhat regretfully, for when we come to those for humans there will be none so palatable.

COMMENTS ON A DELETION

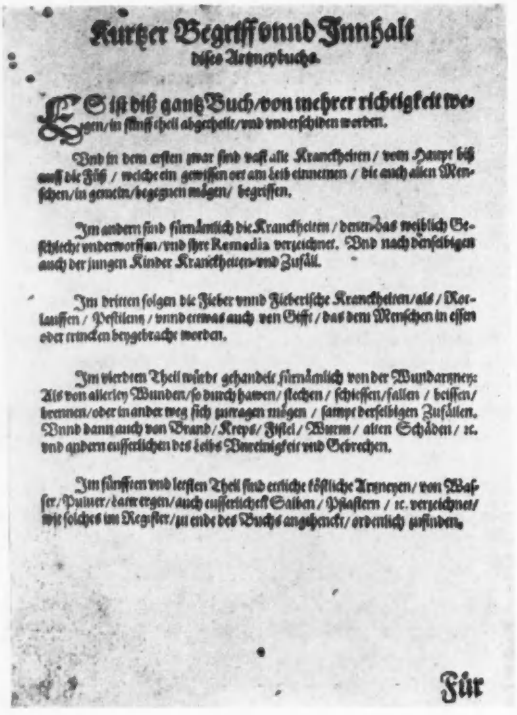
I regret to say that not only bookworms but less innocent destroyers have been at the copy which is here being commented upon. The worms made only marginal notations and left the text intact; but someone has very neatly removed pages 333-336 of Part I: whether one of the many owners of the volume or a borrower, whether by order of the Duke or ducal censor, cannot now be known. If it was the censor, he may have thought the excised matter was too much like that of the very books which the Duke's physician so heartily condemns. The two sheets were cut out long ago, for the edges of the cut are browned by time, and it is quite possible that the excision dates at the time of publication. Consulting the table of contents, it is clear that the excised pages dealt exclusively with remedies for impotence, love potions, charms, and other magic. Was some lovesick swain or eager maiden guilty of a theft? Hardly. Some old fellow married to a young wife? More likely. Such marriages were more frequent then than today. It is especially likely because much attention is elsewhere in the book paid to sterility in women. But we shall never know who cut out the two leaves. It is the only defect of the text.

WAS THIS A FIRST COPYRIGHT?

Before proceeding to the text itself it is interesting to observe that the author gives notice on the title page, just above the imprint, that the book is by royal authority protected against copying for twenty years—seemingly an early example of the copyright principle.*

* A personal communication to the editor from William Brown of the copyright office at Washington, D. C., states:

"It does not appear that copyright in the modern sense of the term existed in any country during medieval or late medieval times. There was a system of licensing by the Crown for the printing of books, but this was mainly to raise revenue and exercise censorship. The first real copyright enactment for the protection of authors was the well known British statute of Anne entitled 'An Act for the Encouragement of Learning,' passed in 1710."



Kurtzer Begriff vnnd Innhalt
dises Artzneybuchs.

Es ist diß gantz Buch/von mehrer richtigkeit wegen/in fünff theil abgetheilt/vnd vnderschiden worden.

Vnd in dem ersten zwar sind fast alle Kranckheiten/ vom Haupt biß auff die füß / welche ein jeglicher an seinem leib einnemen / die auch allen Menschen/in gemein/begegnen mögen/ begriffen.

Im andern sind fürnämlich die Kranckheiten / denen das weiblich Geschlecht vnderworffen/vnd jhre Remedia verzeichnet. Vnd nach derselbigen auch der jungen Kinder Kranckheiten vnd Zufäll.

Im dritten folgen die Fieber vnnd Fieberische Kranckheiten/als / Morlauffen / Pestilentz / vnnd etwas auch von Gifft / das dem Menschen in essen oder trincken beygebracht werden.

Im vierdten Theil würdt gehandelt fürnämlich von der Wundartzney: Als von allerley Wunden/so durch hawen/ stechen / schiessen/fallen / beissen/ brennen/oder in ander weg sich zutragen mögen / sampt derselbigen Zufällen. Vnnd dann auch von Brand/Kreps/ Fistel/Wurm / alten Schäden/ &c. vnd andern eusserlichen des leibs Vnreinigkeit vnd Gebrechen.

Im fünfften vnd letsten Theil sind etliche köstliche Artzneyen/ von Wasser/Pulver/Latwergen/auch eusserlichen Salben / Pflastern / &c. verzeichnet/ wie solches im Register/zu ende des Buchs angehenckt/ ordentlich zufinden.

Für

Fig. 4.—Outline of Contents. Translation follows:

BRIEF COMPENDIUM AND CONTENTS
of this Book of Medicine

For the purpose of greater accuracy, this whole book [it contains 1,000 pages] has been divided into five distinct parts:

The first dealing with almost all maladies from head to foot, occurring in particular portions of the body, common to men;

The second part deals mainly with maladies peculiar to women, and their remedies, followed by those for diseases and accidents of children;

The third deals with fevers and maladies attended with fever, such as erysipelas and pestilence, with some directions as to antidotes for poisons that may have been taken in food or drink;

The fourth part deals with medicaments in surgery, chiefly of such wounds as have occurred through flogging, cutting, shooting, falling, biting, burning, and the like, including their contingencies; likewise gangrene, cancer, fistula, worm-ulcer, old wounds, etc., as well as other external ills of the body, uncleanliness, and bodily infirmities.

The fifth and last part deals with sundry excellent remedies, fluids, powders, electuaries, as well as salves and plasters, etc., as shown by the accurately compiled Register [table of contents].

Why, we may well ask, was this book so protected; and why, indeed, was it compiled at all? The answer is given in the preface, where Court Physician Gäbelthouer—after referring to Adam and Eve's disobedience as the origin of all ills—explains that prior to the printing of this *Artzneybuch,* there were many so-called medical books extant, some of them purporting to be the genuine work of the famous physicians whose names they bore but which were in reality pirated and garbled texts, shamefully disfigured by mercenary printers and publishers—the preface names several of them—with numerous additions and changes which might increase the sales. The Duke and his Hofmedicus now proposed to chase these pirates out of business by publishing a protected (*copyrighted* ?) collection of prescriptions chosen by an accredited physician of unimpeachable standing. The author therefore warns the public against all other medical works, which are likely to do more harm than good. This book, he states, is the only safe guide. It is the light thrown by this preface on the origin of the book that gives the work much of its interest; it is clear that we are not here dealing with the brazen impudence of some quack, but with the highest medical and political authority of Württemberg in 1594 (the year of the preface). The astonished modern reader can only ask himself what sixteenth-century quackery might have been like, if this *Artzneybuch* represents the best that was then known to regular or scientific medicine. Besides, in view of the presumable copyright, it is evident that the book was most deliberately compiled in the thick of a fight against irregular practices. Apparently up to that time there had been no copyright or other protection against piracy; hence the Duke secured for Court Physician Gäbelthouer a royal grant of protection for twenty years. The Duke had apparently, as we gather from the preface, grown exceedingly tired of the unscrupulous practices of the medical fakirs of his day—or tired perhaps of the importunities of his protégé—and had commanded Hofmedicus Gäbelthouer, the respected physician of his family for many a long year, to compile an entirely trustworthy work which should embody the best and most reliable of all the remedies for bodily and mental ills that were up to that time found effective, rejecting everything else.

OTHER QUESTIONS WHICH ARISE

The present *Artzneybuch* was the result. Heaven knows what, considering the status and the contents of this work, the others must have been! The medicus goes into the most effusive details concerning the wisdom of his ducal master's decision in this and other matters leading to civic and other improvements, and cites the acts of wise rulers and the wisdom of the ancients generally, with regard to the science of medicine and the cures of disease; he stresses especially the custom of the Egyptians in exposing their sick or injured persons out in the streets, hopeful that one of the passers-by, formerly likewise afflicted, could prove helpful with counsel or medicaments.

Part I of the *Artzneybuch* begins abruptly, with no introductory matter, with prescriptions for diseases of the head and neck. The first lines of page one contain the following remedy for headache:

"Mix woman's milk with rosewater and apply to the head with a soft cloth. For very severe pains, add leek to this mixture."

The frequent recurrence of woman's milk in the prescriptions, the effectiveness of human urine, especially of babies and virgins, the potency of excrement both human and animal, are features of this highly reputable work which one is inclined to regard with astonishment, until it is remembered that even today, in Europe and here and there among foreigners now living in

America who have brought the traditions of their folklore medicine with them, such remedies are still used.

For the use of woman's milk, virgin's urine, and a variety of excrements, it is possible that the new modern psychology may have an explanation; the Freudians can certainly be counted on to trace it directly to the sexual instinct; and some habits, in eating, of dogs and other animals may offer a clue.

As the reader proceeds through the prescriptions which will be here quoted, other questions will arise: for instance, whether or not the practitioners of that day were conscious of the true and the bogus portions of some of their remedies, holding perhaps that the bogus ingredients might be useful psychically while the really valuable portion did the rest. For instance, there is constantly to be found a direction to apply "as hot as the patient can stand it" some poultice composed of excrement. The psychic value of a bad smell and a disgusting taste is not entirely obsolete in the twentieth century; and the value of hot applications is far from being even obsolescent. There is also the recurrent direction to bake or otherwise cook the ingredients or some of them; in some cases the motive for this can be dimly perceived, again it seems to be hocuspocus. These and other considerations will occur to the reader as he goes along, but as he reads let him be not too quick to scoff: there is a good deal of the sixteenth century with us yet.

The following are chosen here and there, almost at random, from the entire work.

SIXTEENTH CENTURY REMEDIES FOR HEAD AND NECK CONDITIONS

The first paragraphs of page 1 contain the following:

"For ***headache,*** mix woman's milk with rosewater and apply to the head with a soft cloth. For very severe pains, add leek to this mixture."

"For ***continual pain of the head,*** secure the skin of a stag, and bind about the head (of the warmth of the living animal; neither warmer nor colder), and keep it on day and night until relief follows."

"For ***almost insufferable pains in the head,*** secure a number of apricot seeds; mash to a fine pulp and mix with cobwebs, adding a little rosewater; apply this delicate substance to the aching parts."

"For ***dizziness,*** the most effective remedy is a few drops of the blood of turtle doves in a small glass of wine, to which would best be added a few blooms of hellebore and coltsfoot. The patient is to drink no other wine, however, and to refrain from garlic, onions, sauerkraut, and fat, and to be very moderate in all his eating."

A remedy for *nausea and dizziness* which the author recommends as almost infallible, since he has tried it with the greatest success for forty-nine years of practice, is the following:

"Take the brains of a fox, caught by dogs; bake it, and give it to the patient on an empty stomach of mornings, without any other food for some three or four hours. This remedy is most effective when the brain is secured from a fox caught in the forenoon when the moon is crescent in Virgo. To bring about complete cure, three separate fox brains are to be consumed successively, the animal always to be caught in the forenoon, by dogs. To add a little vinegar and galanga root while the brain is boiling before being baked, is excellent. Avoid exercise during the week in which the cure is to be effected; drink very little wine and no strong wine whatever; wear corals around the neck day and night, and a cure is certain, with God's help. This remedy applies to men only. For a woman, especially a young woman, take a young female dog, cut it open, carefully secure its gall bladder, prick it and let the gall ooze into a clean tin vessel; add a little vinegar, and give to the patient to drink. But make sure to hold your hand over her mouth after she has drunk the remedy; otherwise she is likely to vomit it; if, nevertheless, that happens, you must try it again with another female dog's gall. This remedy is also effective with some men, excepting that the dog must be male. If it seems impossible for the patient to retain the gall, add sugar until the bitter taste is sufficiently overcome."

Yet another infallible remedy for *continual dizziness* is the following:

"Take a young swallow from her nest when the crescent moon is in Virgo; cut off the head and let the blood run into a vessel containing white frankincense; stir thoroughly until the fluid thickens; then give it to the patient when the moon is waning, three days in succession. But by all means see to it that the patient during the progress of the cure does not become angry at anything."

For *epilepsy,* the following remedies are recommended as infallible:

1. "The droppings of wild geese, burned to a powder in a glazed pot; give to the patient night and morning in wine or beer, in quantity equal to a gold guilder. This is also excellent for fevers of all sorts."
2. "The marrow of a female deer, drunk in warm beer."
3. "Skin a small mouse, remove its entrails except the lungs and liver; burn in a new unglazed pot; mash to powder; mix with water of linden blossoms; give a tablespoonful every morning; half portion for children." [And to this prescription the medicus adds "***Probatum***" (it has been proved).]
4. "At the first signs of epilepsy, as the very best preventive, obtain the heart of a stork and give it to the patient to eat." [The text does not state whether raw or cooked. "***Probatum***" is again the commentary.]
5. "Very serious cases are effectively treated as follows: Take a handful of peacock droppings, mix in wine to the weight of a pound. As soon as the patient is capable of it, make him drink about a third of this quantity; put him to bed and secure a good sweat. After that, give him the second third of the mixture and again induce a sweat. After another hour, give him the remainder of the mixture and cover him heavily for a final sweat. This is practically certain to effect a permanent cure."
6. "Take the right eye of a wolf, the left of a she-wolf; dry, and hang about the neck of the patient, who must wear them for three months continuously, during which time he must neither bathe nor otherwise get his body wet."

Treatment of insanity:

1. "Cut the patient's hair close to his head (shave it off completely by preference); then cut a ram's liver in two and bind it while yet warm on the patient's head."
2. "Or: Cut in two a living rooster and apply similarly; or a young she-wolf, if you can procure one; or apply a sheep's lung in the same way."
3. "In case of complete insanity, take a freshly baked loaf of bread; remove the soft inner part and replace with a complete ox-brain; bind on the patient's head and it will cure his brain and restore his mind."
4. "Or: Rub the patient's hands and feet well with vinegar; give him a thorough enema; then rub a black chicken [it does not state whether dead or alive] over his shoulders and head, especially the forehead. That

will bring relief. Seeds of poppy and bulrushes mixed in white of egg and woman's milk, applied to the head and put in ears and nostrils, will speed the cure."

5. "Cut off with one blow the head of a black strong ram that has never coupled. Make sure not to kill him otherwise. Boil with skin, wool and all, until the brain is well done. Then put into a pan well filled with flour. Add the following spices, well pounded and mixed. Then roast all thoroughly. Compel the madman to eat it, any way you can, preferably a third of it three days in succession, whether willing or not. The spices which you must be sure to add are the following: cinnamon, nutmeg, nutmeg flower, clove, and ginger, ten grains of each. See to it that he goes to sleep after eating the mixture; the heavier the sleep the better."

Treatment of insomnia:

1. "Mix in rosewater, the water from the entrails of a red chicken, and woman's milk, equal portions of each; apply lukewarm on a soft cloth to the temples."

2. "Take the grease from an ass's ear—it matters not what kind of ass—and apply to the patient's temples."

3. "Fresh goose grease, first heated in a tin can placed in hot water, then rubbed over the temples on going to bed."

Scabby or scurfy head:

1. "Cut off all hair; soak head in lukewarm lye-water. Secure some white dust from the miller, mix it with the white of an egg to a sort of cake; apply on cloth in little patches where the scabs are. Every day, after removing the little patches, wash the head with the urine of a red cow (make sure that the cow is red all over) mixed with a little alum. If the scabs are very putrid, increase the amount of alum."

2. "Procure some small toads of the kind that appear after a rain, burn them to powder, put in water mixed with lye; apply to the scurfy parts of the head."

3. "Take nine red snails, put into a new pot, add a handful of salt, and let stand for several days. Then take the fluid and rub it well into the scabs, but be very careful not to get any of it into the patient's eyes. Use every day or every other day."

University of California at Los Angeles.

(To be Continued)

CLINICAL NOTES AND CASE REPORTS

SPONTANEOUS RUPTURE OF SPLEEN—FOLLOWING MALARIA THERAPY FOR GENERAL PARESIS

REPORT OF CASE

By EDWARD W. TWITCHELL, M. D.
San Francisco

THE patient was a 32-year-old male, who exhibited typical physical mental and laboratory findings of general paresis in a stage of rather marked mental dilapidation. Long-continued treatment with mercury, bismuth, and arsenicals had been without avail.

On July 20, 1929, patient was given, intravenously, about five cubic centimeters of blood, taken from another patient with inoculation malaria. On September 7, 1929, as there had been no response in the way of fever, five cubic centimeters of citrated blood, obtained from a third patient, was given into the buttock. The following day his temperature rose to 104.5 rectal. Fever, tertian and quotidian, continued. Numerous malarial parasites were discovered on several examinations. After eighteen paroxysms of fever, which he stood quite well, showing no particular exhaustion, on the morning of September 10 he was given ten grains of quinin by capsule and shortly thereafter vomited. Following the vomiting he had a collapse, which was treated with stimulants and quinin in suspension, given at the rate of three grains every three hours. The next day, however, the abdomen began to distend without pain, and efforts were made all this day to relieve the distention by stimulant enemata. The next morning the distention persisted and, in addition, the patient began to vomit. Dr. Thomas O'Connor, on being called, suggested the possibility of an exploded appendix. Patient was taken to a hospital, where that evening an incision was made in the appendix region and the abdominal cavity was found full of blood. The wound was closed, and a midline incision was made higher up. Through this means it was discovered that there was a large accumulation of coagulated blood in the neighborhood of the spleen and soon an irregular tear was felt on the lower surface of that organ. The patient being in a greatly exhausted condition the wound was closed without any further investigation. He died the following morning.

Pathological Report.—(By Dr. A. M. Moody.) There is free blood in the peritoneal cavity and a large amount of clotted blood adherent to the spleen and between it and the diaphragm.

The spleen is soft and has the following dimensions: 15.5 centimeters long by 10.5 centimeters wide and from 3 to 5.5 centimeters thick. Freed of blood clots and after fixation it weighs 480 grams. It crepitates and floats in water. There is an irregular tear, 8 centimeters long, in the capsule extending obliquely from a point in the hilus 5 centimeters below the upper end to a point 4 centimeters from the lower end on the posterior edge. The torn region is irregularly covered with clotted blood.

On section, after fixation, it contains scattered small regions of infarction at the hilus and beneath the capsule over the cortex. There are numerous gas spaces disseminated throughout.

Smears of the fresh spleen pulp contain frequent Gram-positive bacilli (*B. welchii*), but no whole malarial parasites are found after a thorough search of smears stained with Wright's stain. There are, however, scattered deposits of pigment and blue-staining fragments, suggestive of disintegrated plasmodia.

Sections of spleen contain hyperplastic pulp with scattered regions of necrosis, leukocytic infiltration, pigmentation, and a decrease in lymphocytes. There is no cellular reaction about the gas spaces.

The brain is characteristically paretic in type. There is a moderate perilobular hepatitis, but other organs in the abdominal cavity are devoid of noteworthy alterations.

Death resulted from anemia secondary to hemorrhage from the spleen, following its spontaneous rupture.

909 Hyde Street.

Playgrounds Are Becoming Epidemic.—The number of towns and cities in the United States and Canada reporting play areas under leadership to the Playground and Recreation Association of America grew last year to nearly a thousand, and more than 1100 new play areas were opened within the year. Eight hundred and ninety cities reported a total of 23,000 recreation leaders and a total expenditure of nearly $33,540,000 for public recreation. During the year about 14,000 persons were enrolled in training courses for recreation leadership.—***Bulletin United States Children's Bureau.***

Thirteen Million Profit of the Mayo Clinic to Be Used for the Advancement of Medical Science.—Dr. William Mayo of Rochester, Minnesota, announced April 11 that the fortune estimated at $13,000,000, which he and his brother have amassed at their famous clinic will be used for the advancement of medical science. It will go to the Mayo Foundation for Medical Education and Research, he said, which already is training three hundred surgical hands to carry on the work of its two sponsors.—*Illinois Medical Journal,* June 1930.

BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An open forum for brief discussions of the workaday problems of the bedside doctor. Suggestions for subjects for discussion invited.

SENILE KERATOSES

H. J. Templeton, Oakland.—If all senile keratoses were thoroughly removed at an early stage there would be far fewer skin cancers. Untreated, a fair percentage of these apparently insignificant lesions develop into the more malignant of the epitheliomas, the squamous cell variety. On the other hand, if they are diagnosed and treated early the therapeutic and cosmetic results are excellent. Moreover, the cause of preventive medicine would be aided. The cancer publicity campaign of Bloodgood and others is causing the public to become "cancer conscious" and to seek the advice of physicians in regard to these and other cutaneous lesions. It behooves us, then, to be prepared to handle them.

These lesions are primarily the result of senile changes in the skin, "the skin becoming old in spots." Contributory causes are exposure to wind and sunshine and local trauma, such as razor cuts and thorn pricks. Most of them are seen in the sixth and seventh decade of life, but they may occur in middle age. They are most frequently seen on the face and on the dorsum of the hands. Beginning most frequently as roughened spots which can often be felt before they can be seen, the lesions gradually increase in depth and breadth until they are about the size of a split pea. About this time a crust forms which the patient may remove but it soon recurs, generally thicker than ever. After several such cycles have occurred the base becomes thickened and reddened and epitheliomatous degeneration is in progress. Another variety of this disorder begins as brownish "old-age spots." These vary from split pea to coin size and are smooth at first. Later the surface becomes thickened and warty and the above described cycles occur.

While it is true that not all senile keratoses become epitheliomatous, the percentage of such degeneration is sufficiently high to justify the practice of removing all of them. Certainly removal is imperative if they are growing, are being irritated, or are showing thickening of their bases.

Before attempting to treat these lesions one should familiarize himself with their appearance when undergoing malignant degeneration, for in such cases treatment should be quite radical. Less energetic measures are permissible in the early stages for the sake of a good cosmetic result. If the lesion is quite superficial thorough curettage followed by the application of trichloracetic acid will generally suffice. This is a method which is available to all, requiring no expensive apparatus. Thirty to sixty-second applications of carbon dioxid snow act very nicely also. If the lesions are somewhat thicker they can be destroyed very effectively by the actual cautery or electrodesiccation. If cosmetic results are paramount it may be desirable to first try applying the beta rays of radium.

Following the destruction of all of the existing keratoses the patient should be advised to thoroughly cold-cream the face (or hands) each night. He can also be given an ointment containing 10 per cent of salicylic acid in lanolin and cold cream to apply to small areas of skin which show any roughening. He should report to his physician promptly if any new keratoses develop in spite of such preventive treatment.

* * *

Merlin T. R. Maynard, San Jose.—Precancerous lesions of the skin are most commonly of two types, one being the senile keratoses and the other the seborrheal keratoses. The senile types are most commonly found on the face, backs of the hands, and the tips of the ears. They are also found, but somewhat less commonly, on the back and sides of the neck.

Roughly speaking the senile type occurs on the areas of the skin which are most commonly exposed to sunlight. The seborrheal type usually occurs on the face at the hair line, on the bridge of the nose, above the clavicles, between the shoulder blades, and between the breasts. Their distribution follows the location of the greatest number of sebaceous glands in the skin and those areas on which the sebaceous material is showered, such as the sides of the neck.

There are many other types of precancerous lesions, notably moles, keloids, sebaceous cysts, arsenical keratoses, and warty growths such as condylomata. However, since the malignant degeneration of these lesions is only occasional they will not be included in the scope of this discussion.

The causes of senile keratoses are prolonged exposure to sunlight, accompanied by atrophic changes in the skin. The hyperkeratoses develop as scaly, firmly attached spots that are removed with difficulty and are found to overlie a raw or a shiny surface; in the later stages of precancerous changes they may have a reddened and thickened base, at which time it is very difficult to draw the line between inflammatory reaction and actual cancerous degeneration.

The sebaceous keratoses are likewise firmly attached to the skin, but on removal are found to have prolongations into the orifices of the sebaceous openings. Degeneration follows very similar lines to those of the senile type.

It is well worth remembering that keratoses below a horizontal line drawn through the tip of the nose are more likely to develop into the squamous cell type of carcinoma. Those occurring on the back of the hands are almost invariably squamous in type and require very radical treatment.

The senile keratosis normally develops in old age. However, the condition of senile skin can be produced by injudicious exposure to sunlight and the result of overindulgence in sun baths. In fact, we are occasionally seeing senile changes in juvenile skins.

The treatment of both seborrheal and senile keratosis in my hands is simply freezing with carbon dioxid snow for ten seconds. The underlying seborrheal condition should be corrected as far as possible by local treatment with appropriate ointments or x-ray. Exposures of x-ray or radium are successful if used in both types of lesions and results in an absence of scars. The best treatment of all is prevention. The skin must not be overexposed to sunlight. It must always be guarded against a second degree sunburn. In the aged even a mild first degree sunburn is dangerous.

The patient subject to keratoses should always keep the skin covered with a mild ointment and should wear a wide-brimmed hat. All the lesions that develop should be removed as soon as possible and radical destruction must be used on those that show reddening and thickening of the underlying skin.

* * *

Moses Scholtz, Los Angeles.—The clinical significance of the skin cancer is not sufficiently appreciated by the general profession.

The available statistics in this country assign to skin cancer, as the most conservative estimate, 5 per cent of the general cancer mortality. Taking the average annual figure of general cancer mortality as one hundred thousand, it means that skin cancer alone kills at least five thousand people a year.

The responsibility for the mortality from skin cancer comes back to the rank and file of the medical profession because skin cancer is the only clinical type of cancer which admits 100 per cent prevention and 100 per cent cure if recognized and treated early. It can be accepted, as a clinical axiom, that cancer never arises from a perfectly normal skin, that it develops only on the skin pathologically altered, as in so-called senile keratoses, nevi, scars, patches of leukoplakia, chronic ulcers, etc.

These lesions came to be known as precancerous lesions and justly so, as every case of skin cancer in the early stage of its development takes its inception from one of these lesions.

The most important type of precancerous lesions, numerically, are unquestionably senile keratoses, well-known brown and grayish rough keratotic spots on the face of elderly people. Sometimes they assume the seborrhoic type, in which case they present a softer consistency, yellowish tinge and a more benign prognosis. It is the keratotic type that has a strong tendency to degenerate into basal celled and not uncommonly squamous-celled epitheliomata. It is also a well-established empirical observation that sunlight exerts actinic stimulative effect on senile keratoses and is conducive to a development of the new lesions. It is therefore a basic prophylactic measure to advise patients to avoid prolonged sun exposures.

Once a person develops keratotic lesions, a tendency toward developing new lesions is gradually established. For this reason it is advisable to urge these patients, after the destruction of the present lesions, to report for inspection two or three times a year. Senile keratoses are easily and effectively destroyed by a variety of therapeutic measures. The method of choice is electrodesiccation or electrocautery. More superficial types, particularly soft yellowish seborrhoic types, can be destroyed with carbon dioxid snow or chemical cauterization, preferably by concentrated trichloracetic acid. Some of the seborrhoic superficial lesions can be cleared up even by ointments containing 4 to 8 per cent of salycilic acid. Nitric acid should be avoided because of its tendency to produce scars, silver nitrate because of its superficial and mild effects.

The crux of the problem of prevention of skin cancer lies rather in the education of the profession, much more than in the education of the public. It is rather unfortunate that many practitioners consider it below their surgical dignity to handle such insignificant-looking lesions as senile keratoses. Yet, a persistent and continuous general campaign of extermination of these lesions is as sure to bring about a reduction of mortality from skin cancer to a minimum, as the campaign of extermination of rats is the surest prevention of bubonic plague.

Colored Students at University of California Offer to Assist Infirmary.—In appreciation of the educational opportunities that have been offered them by the University of California, and as a token of good will to their fellow students, members of a colored fraternity and sorority have pledged themselves to furnish a room in the new $400,000 student infirmary which will open in August.

Dr. Robert T. Legge, professor of hygiene and university physician, was apprised of the unsolicited gift offer by the officers of the two organizations involved, the Delta Sigma Theta sorority, and the Omega Si Phi fraternity. Vivian Marsh is president and Muriel Taylor is secretary of the sorority, and Thomas Jackson and Harry Bryant are president and secretary of the fraternity.

The gift came about as a result of an announcement by Doctor Legge some weeks ago that, because of the limited funds available, some of the rooms in the new building—which is almost completed—would have to be left unfurnished and unused unless private individuals cared to furnish them as memorials to various individuals whose names would appear on bronze plaques.

Unexpectedly the two organizations of colored students arose to help solve the problem by furnishing one two-bed room for the benefit of all students in the university, regardless of race or color.—***University of California Clip Sheet.***

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Leaflet Regarding Rules of Publication.—California and Western Medicine has prepared a leaflet explaining its rules regarding publication. This leaflet gives suggestions on the preparation of manuscripts and of illustrations. It is suggested that contributors to this journal write to its office requesting a copy of this leaflet.

EDITORIALS

PORTER NARCOTIC BILL, H. R. 11143, NOW A FEDERAL LAW

The Different Porter Narcotic Bills.—In the March 1930 issue of CALIFORNIA AND WESTERN MEDICINE, the Porter Narcotic bills, which had been introduced into the House of Representatives at Washington and which at that time were entered under numbers H. R. 9053 and H. R. 9054, were briefly discussed. The dangers to medical practice which were incorporated in the two bills were indicated, and members of the medical profession were urged to write to their district congressmen and senators.

After the introduction of the aforesaid bills, Congressman Porter introduced a new bill to reorganize the federal narcotic service, this bill becoming known as H. R. 11143. It is this bill which recently passed both houses of congress, and which has received the signature of President Hoover. This particular Porter Bill, in one sense, was a substitute measure for the two previous bills and contained modifications which had been incorporated at the request of the representatives of the American Medical Association. It is hoped that the undesirable and certain drastic features of the Porter H. R. 9053 have been eliminated from this particular measure, and that H. R. 9054 will now be withdrawn from the files, since it would no longer seem to be necessary.

* * *

Some Basic Features in the New Federal Narcotic Law.—In essence, the new narcotic bill H. R. 11143 provides for a Bureau of Narcotics in the United States Department of the Treasury, and brings into and coördinates in this bureau various other agencies which were existent in different federal departments in such manner that the work of these different agencies may be more efficiently harmonized and promoted. This new Bureau of Narcotics will have at its head a Commissioner of Narcotics to be appointed by the President, and the employees of the bureau will be given authority as customs officers, so that, in addition to other duties, it will be possible for them to watch the boundaries of the United States and prevent smuggling of narcotic drugs into the different commonwealths. The determination of the amount and kind of narcotic drugs to be admitted through the different entry ports of the United States is deputized somewhat to the Surgeon-General of the United States Public Health Service, who is called upon to make his recommendations to the chief or commissioner of the federal Bureau of Narcotics.

* * *

Federal and State Legislation on Public Health Measures Must Be Watched.—For a time, before H. R. 11143 was introduced, it looked as if the medical profession was to have thrust upon it another one of those lay bureaus which, through meddlesome deputies and representatives, could have become a real nuisance and menace to members of the medical profession in their daily work and practice. In view of the rapid manner in which the first narcotic measures went on to rapid consideration during the present special session of congress, it is gratifying to know that it was possible to bring into play sufficient influence to delete some of the provisions which otherwise in the future might have become a serious handicap to the practice of scientific medicine. This recent experience also shows how important it is to be constantly on the alert when congress is in session or when a state legislature is in session. It is much easier to battle obnoxious public health legislation before the proposed acts go on to passage to become laws than it is to effect changes once they have been enacted and placed on the statute books, with a powerful group of employees to battle not only for a continuation of their existence, but as a rule for an increase in bureaucratic power.

FOOD FADS AND FALLACIES—RESOLUTIONS THEREON BY THE COUNCIL

Recent Resolutions Adopted by the Council.—In the minutes of the one hundred and ninetieth meeting of the Council of the California Medical Association, as printed in the June 1930 issue of CALIFORNIA AND WESTERN MEDICINE, page 450, are given some resolutions passed by the Council of the California Medical Association. The resolutions dealt with the subject of food and nutritional fads.

Some members of the California Medical Association may wonder why this seeming digression from regular organization work should have

been indulged in by members of the Council. The Council adopted the resolutions in order to call the attention of the members of the California Medical Association to the campaigns, which by faddists and certain mercenary food interests have been carried on in recent years with so much vigor. The constant and powerful propaganda so carried on, strange as it may seem, was responsible for a tremendous change in the amount and kinds of some of the staple foods which had long been used by the American people. So much was this the case that great agricultural and other interests of the United States felt the ill effects of these fallacious exploitations. Of course, the citizens who fell for the propaganda in many instances also paid a heavy price, both from the standpoint of health and of direct and indirect money loss.

* * *

The Resolutions Are Worthy of Perusal.—Members of the California Medical Association who have not already done so may well glance over the resolutions before referred to. Those resolutions can be a handy reference and reply to patients who seek the advice of physicians concerning the value of staple foodstuffs and who have been or are on the verge of being led into dietary errors through food faddism and fallacies of such nature as in the long run would make for far more harm than good.

* * *

What Some California Authorities on Foodstuffs Have Stated.—The problem here discussed has not been a new one in California. Among other medical men who in the past have called attention to the subject is Dr. W. C. Alvarez, who when he was a member of the staff of the Hooper Foundation for Medical Research at San Francisco went on record by stating:

> . . . Some men and women can be greatly helped by bran, and their constipation can be cured if they happen to have the digestion of an ostrich; but if they happen to have congenitally defective or handicapped digestive tracts, if they have ulcers or narrow places, they cannot handle the mass of indigestible material and they promptly get in trouble. . . .

In a recent letter to the editor from Professor M. E. Jaffa of Berkeley, who is so well known as the chief of the Division of Sanitation of the Bureau of Foods and Drugs of the California Department of Public Health, he wrote:

> I am strongly of the opinion that the use of white bread mixed with other foods is not the cause of grave illnesses. Personally, I have used such combinations for upwards of sixty years and expect to for some years hence, just how many I cannot tell.

In the *Weekly Bulletin* of the California Department of Public Health, Vol. VI, No. 47 (copies of which can probably be had on application to the State Board of Health office), Doctor Jaffa also went on record as follows:

> There are so many fads and fallacies in nutrition that it is somewhat difficult to present even a brief résumé. Among the most prominent, however, may be mentioned: 1. The reducing fad. 2. The bread fad. 3. The sour milk fad. 4. The vegetarian fad. 5. The no meat fad. 6. The vitamin fad. 7. The bran or roughage fad.

The American Medical Association's New Committee on Foods.—Along this line it is of interest to note that the American Medical Association recently appointed a "Committee on Foods" as a special subcommittee of its Council on Pharmacy and Chemistry. That committee from time to time presents in the *Journal of the American Medical Association* much interesting and valuable information on foods. It is hoped that this subcommittee on foods will make it possible to bring about an improvement in the attitude of citizens to proprietary and other foodstuffs somewhat akin to that which was brought into existence in the medical profession through the work and reports on drugs and proprietary preparations by the Council on Pharmacy and Chemistry of the American Medical Association.

* * *

Doctrinaire Propaganda in Food Fallacies Should Be Combated.—These brief comments are here presented to indicate to California Medical Association members why the Council of the California Medical Association saw fit to pass certain resolutions on this subject. It is important that members of the California Medical Association should be alert in these matters. With proper facts at hand it is much easier to destroy the influence of fallacious propaganda because such faddist publicity can be much easier attacked and overcome when it is still in its incipient stages.

In the United States the sponsors of these fads and fallacies in nutrition have been successful in leading a large number of citizens to take up these faulty food fancies through the persistent and exaggerated statements that health would be promoted by the adoption of the advice so dispensed (and, we may add, by the food and advice so purchased by the victims of the exploitations).

An interesting example of how some of these food faddists work their promotion games recently came to light in Los Angeles when the local newspapers in glaring headlines called attention, with photographs and text, of scores of citizens in humbler walks of life who went to the city prosecutor's office to enter complaint against one of these so-called "better health food foundations." The story can be told by quoting from the *Illustrated Daily News* of April 23, 1930. To those readers of CALIFORNIA AND WESTERN MEDICINE who may have been somewhat skeptical concerning our preceding paragraphs, the following quotations should prove the desirability of the resolutions which were passed by the Council of the California Medical Association.

The caption of the photographic cut of complainants was as follows:

> ***All Exercised About Their Health.***—Part of crowd of 150 complainants shown as they appeared before City Prosecutor Lloyd Nix yesterday charging they had paid sums ranging from $100 to $1000 each to Gilbert Thayer Health Foundation for ailments they had not been suffering from. The health organization suddenly closed its doors, they said.

The text of the newspaper article reads thus:

An investigation into the —— Health Foundation formerly operating at Fourth and Broadway was launched yesterday by City Prosecutor Lloyd S. Nix, after hundreds of complainants had stormed his office.

Three hundred men and women came in charging that they had paid from $100 to $1000 apiece for treatments for all kinds of ailments which they later were told were purely imaginary.

The complainants asserted that they visited the foundation, said to have been conducted by "Dr." Arthur Benson, listened to the sales talk for health foods and then allowed themselves to be signed up for treatments for various illnesses. Two weeks ago the patients, on calling at the foundation, found it closed.

STATISTICS OF STATE MEDICAL EXAMINING BOARDS—WITH COMMENTS ON SOME OF THE CALIFORNIA TABULATIONS

Statistics as Printed in the Journal of the American Medical Association.—The *Journal of the American Medical Association* in a recent issue (Vol. 94, No. 17, page 1307), presents medical statistics for the year 1929 for the different state medical examining boards of the United States. The report represents a tremendous amount of work and contains facts and figures which should be of interest and importance to the medical profession.

Present-day standards of medical training assume a prominent place in these licensure statistics, and members of the medical profession who are interested in modern-day trends in practice will be able to come to better and sounder conclusions concerning medical practice acts through a perusal and consideration of the facts which stand out in the article.

Because, like charity, many things should begin at home, so in this matter of state medical board statistics those tabulations which deal with California should be of special interest to Californians. To that end the editor of CALIFORNIA AND WESTERN MEDICINE calls attention to some of the data in this *Journal of the American Medical Association* article, which have a special relationship to conditions affecting the practice of medicine in California.

At this time a discussion of this subject also should be of special interest because the California legislature will convene in January 1931; it being quite possible that one or more amendments to the Medical Practice Act of California then may be submitted. On this same subject, mention also may be made of the report of the Special Committee on Revision of the California Medical Practice Act and of a possible basic science act, which committee was appointed by the Council of the California Medical Association more than a year ago, its report being rendered to the House of Delegates at Del Monte. (See page 431 of the June 1930 issue of CALIFORNIA AND WESTERN MEDICINE.)

* * *

California's Licensure Problems by No Means Solved—Value of a "Basic Science" or "Qualifying Certificate" Law.—The last word concerning medical and healing art licensure in California by no means has yet been said. To some members of the medical profession, licensure conditions in California may seem to present both a depressing past and a poor future outlook, but in the light of the struggles which in the days gone by have taken place to safeguard medical standards in California, the wonder is not that we have so little, but rather that we still have so much. Colleagues who hold to the opposite viewpoint should ask themselves what part in the way of time and money expenditures they themselves bore when these battles of the past were on. For let it be kept in mind that, in the battles for preservation of principles, all have direct and personal responsibilities. Therefore, no matter what may have happened in California as regards cultist medicine, the members of the California Medical Association should feel grateful, insofar as regular or scientific medicine is concerned, that the standards and requirements of California measure up very well with the best in America.

It is quite true, when the pictures of the influence and ramifications of California cultist medicine are gazed upon, that one has less cause for gratulation. To the viewpoint of the editor, that is why a so-called "Basic Science Act," or what is probably a better term, a "Qualifying Certificate Act," will continue to come before the organized medical profession of California for consideration. As the editor sees this problem of proper minimum standards for all classes of practitioners of the healing art, such a basic science, or rather, such a qualifying certificate law, if properly drawn, could be made to become a factor, if not the most powerful one that could be brought forward, to prevent new and as yet unborn cults from getting a foothold in California in the future. For once such a cult of low educational and training standards gets such a foothold, it is almost certain that it will follow the course of other California cults in the past by almost inundating the commonwealth first of all, with a large number of graduates.

These graduates will then seek legal recognition from California, and with the precedent of separate recognition of naturopaths, osteopaths, and chiropractors, probably receive it. The new cult would probably create its own standards of education and licensure, and California might witness a repetition of the chiropractor situation in which California gives licensure to about five chiropractors to every single physician and surgeon.

* * *

Number of Osteopathic Graduates Who Were Granted Licenses as Physicians and Surgeons in California.—Along this line it is interesting to note that of a total of 169 graduates of osteopathic schools who in 1929 were registered as physicians and surgeons in different states of the Union, the State of California was in the lead with a total of ninety-three osteopathic practitioners who were given such licenses. On this point the *Journal of the American Medical Association* states:

Boards in four states, however, registered as physicians and surgeons, by examination or reciprocity,

169 graduates of osteopathic colleges, which, if measured by the same standards as are applied to medical schools, could be graded only in Class C—which are no longer deemed worthy of mention among medical schools—since the teachers, with rare exceptions, have not had a training in a medical school, or in differential diagnosis, and therefore are not qualified to instruct others in the essentials of the healing art. . . .

* * *

The Medical Schools of California.—Coming back to medical schools now actively functioning in California, we find that California has three schools of nonsectarian medicine, namely, the medical schools of the University of California and of Stanford University at San Francisco, and the College of Medical Evangelists at Los Angeles. The recently revived School of Medicine of the University of Southern California thus far has only given instruction to first and second year medical undergraduates and on that account does not at this time enter into these comments.

Last year's graduates from the California medical schools were licensed and admitted to practice in California as follows: University of California had 45 graduates and 40 were licensed in California; Stanford University had 49 graduates and 45 were licensed in California; the College of Medical Evangelists had 60 graduates and 53 were licensed in California.

* * *

Where Graduates of Nondescript Colleges Seek Licenses.—An interesting table gives the number of graduates of Class "C" and nondescript colleges licensed in the last ten years by different medical boards in the Union. (The term "nondescript" is used by the American Medical Association Council to refer to former Class "C" medical colleges, the Class "C" group being no longer recognized by many state boards.)

Massachusetts here leads off with a total of five hundred and thirty such graduates who in the last ten years received licenses to practice in that state, being followed by California, which has licensed four hundred and eighty-four such graduates of Class "C" and nondescript colleges.

For the single year 1929, California gave licenses to ninety-four graduates of such schools, out of 116 who presented themselves for examination or license.

* * *

Graduates of Class "A" Medical Schools Today Form the Bulk of New Licentiates.—For the year 1929 the addition to graduates already licensed in previous years to practice in the different states of the Union is represented by a total of 7640 physicians, this being 267 more graduates than were licensed in 1928. It is interesting to note that 87 per cent of the physicians who were thus granted licenses in 1929 came from Class "A" medical schools. By way of contrast, the percentage in the year 1918, for graduates of Class "A" medical schools, was 58.

Another table gives the figures as applied to the different states of the Union, of applicants who received licenses or who were rejected, for each year since 1925. In California, for this five-year period, 1799 graduates were so examined. Of this number, 1651 were registered and 148 were rejected; the percentage of rejections for the five years being 8.2. In New York 5084 applicants were examined with 12.5 per cent rejections; in Massachusetts 1451 applicants were examined with 29.2 per cent rejections. These percentages, however, do not tell the entire story. They are mere indications or gestures in certain directions. For proper comparison, due allowances must be made for the various factors and differences existing in the medical practice set-ups in the different states.

The total number of physicians and surgeons to whom certificates were granted in California during 1929 was 660. In the same year ninety-three osteopaths secured licenses as physicians and surgeons, these licenses being, however, granted by the California Osteopathic Board.

* * *

Figures Showing Annual Accessions of Medical Licentiates in California.—The total number of nonsectarian physicians who were licensed in California in different years since 1925 are as follows: in 1925, 584 physicians were licensed; in 1926, 630 physicians were licensed; in 1927, 648 physicians were licensed; in 1928, 595 physicians were licensed; and in 1929, 660 physicians were licensed. Inasmuch as the total numbers of nonsectarian graduates for the entire United States, and also for California, have not undergone great variations in recent years, it is possible that California will probably grant licenses to approximately the same number of licentiates for the next few years. However, the publicity associated with the recent United States census figures may direct the attention of a much larger number of physicians to California and may lead to a considerable increase in the number of licensure applicants during the next several years.

* * *

Relative Proportions of Class "A," Class "B," and "Nondescript School" Graduates.—In the entire United States, considering the total of 7646 graduates who received licenses, Class "A" schools supplied 87.2 per cent; Class "B" schools, 3.4 per cent; Nondescript and Class "C" schools, 3.6 per cent; and miscellaneous and foreign schools, 7.1 per cent. These figures may be taken as a general index of the type of medical service which may be expected in the future, insofar as scientific training and ability are concerned.

In line with the percentages given, it may be stated that during the last six years California has given licenses to 2704 graduates of Class "A" medical schools; to 145 graduates of Class "B" medical schools; and to 362 graduates of "Nondescript Schools."

* * *

Reciprocity Figures.—In the matter of reciprocity, California registered 268 physicians who in 1929 came to it from other states, and at the same time gave credentials to fifty physicians who had been previously licensed in California

who desired to transfer to other states by reciprocity. The total of reciprocity licenses as applied to all states of the Union has increased from 989 in the year 1907 to a total of 2308 for the year 1929. In the last five years a total of some 221 physicians who had been licensed in California took transfers or reciprocity credentials to other states.

* * *

Amazing Progress in Elevation of Educational Standards in the Last Twenty Years.—A very interesting paragraph in this article in the *Journal of the American Medical Association* reads as follows:

> Including Alaska, there are forty-three states which have adopted requirements of preliminary education in addition to a standard four-year high school education. Of this number, forty now require the two-year standard. All state requirements of college work have been established since 1908, twenty-one years ago. Only one state still has no definite requirement of preliminary education, while six states still require only a high school education.
>
> It is interesting to note also that fourteen states now require the completion of a year's internship in a hospital before the candidate is qualified to take the professional examination. All such requirements also have been adopted since 1909. . . .

* * *

Unfortunate Results When Sectarian Boards Have Power to Grant Physicians' and Surgeons' Licenses.—Commenting on the lesser number of graduates of other than Class "A" medical schools who now present themselves, and on commonwealths such as California, which give licenses to osteopaths to practice as physicians and surgeons, the *Journal of the American Medical Association* makes the following statement:

> The publication of the tabulations referred to has largely reduced the number of low-grade medical school graduates licensed each year. These tabulations also revealed the increasing tendency to license osteopaths as physicians. Under fair examinations it was shown that large percentages of such candidates fail.
>
> In California, however, the osteopaths have been granted a separate board of osteopathic examiners to license them as physicians and surgeons under the same law which provides for graduates in medicine and in this way obtain the same privileges as physicians, but have been exempted from the reasonably severe examination given by the board of medical examiners for the licensing of graduates of medical schools. The different character of the two examinations is indicated by the fact that since this concession was secured the failures of osteopaths were reduced by 30 per cent.

* * *

A Contrast Between Medical and Legal Profession Licensure Standards.—Just as the above comments were ready to go forward to the printer, there appeared in the Los Angeles *Times* of June 20, 1930, a report from the California State Bar Association, on licensure standards of the legal profession.

From what has been said in the preceding paragraphs it is noted that the medical profession of the United States started a radical house clearing in its medical school and licensure standards more than twenty years ago. For instance, in the year 1905 there were in the United States 153 medical schools who sent their graduates before state examining boards. In 1929, however, there were only sixty-four recognized medical schools in the United States whose graduates could appear before the different state examining boards for licensure.

The article in the *Times* sheds light on the deplorable standards still existing in the legal profession. Fortunately under the new "state bar association" organization of the legal profession, there can be little doubt but that from now on our colleagues in the profession of law will make up somewhat for their past tardiness.

A consideration of some of the problems which even today face the legal profession in the matter of legal licensure may be of value to medical men in more ways than one. The following excerpts show that a sister profession has similar educational problems to those met with in medicine. Also that with a legal profession committed to high standards of legal practice in the future, it may be fair to expect in the future a more stringent enforcement of the provisions of our medical practice laws when our cases go before the courts.

As a semi-consoling thought, therefore, and because of the general facts and principles brought out, these excerpts from the state bar association report will be here printed:

> It is an astonishing fact that the compulsory educational requirements of persons seeking to practice law in California are below those of persons desiring to become barbers or beauty culturists.
>
> The result has been to make California a dumping ground for would-be lawyers who have failed to pass examinations in other states.
>
> It is impossible to believe that the legislature of California will continue to tolerate this condition, affecting as it does the safety, the interests and the welfare of the public which looks to those practicing before the bar for protection. . . .
>
> In California the only requirement of a person seeking to take the examination for the bar, and to enter upon the vital profession of the practice of law, is that he or she be twenty-one years of age, be of good moral character, and have had three years of study in the law.
>
> The result has been to encourage fly-by-night law schools to induce many persons entirely unfit to undertake the study of law, and to encourage a great number of young men and women to try to become lawyers through correspondence schools and home-study courses.
>
> The legal profession is an important one, and those desiring to participate in it should be persons of intelligence and character. More harm is done to the public by attorneys who are ignorant than by attorneys who are guilty of willful wrongs in the carrying on of their business. . . .

No further comment is necessary. One need only to change the word "legal" in the quotations just given to the word "medical" to make the paragraphs accurately describe conditions which existed in the medical profession in California years ago, and which so far as cultist medicine is concerned, may still be stated to apply.

Until these sore spots in the professions of medicine and law are healed, it will be necessary to carry on the battle for standards of education and training that will make for an adequate protection of the public, and at the same time be a real credit to two of the learned professions.

MEDICINE TODAY

Current comment on medical progress, discussion of selected topics from recent books or periodic literature, by contributing members. Every member of the California Medical Association is invited to submit discussion suitable for publication in this department. No discussion should be over five hundred words in length.

Medicine

Seasonal Hay Fever—Some Problems in Treatment.—Almost two decades have elapsed since Noon [1] and Freeman [2] in 1911 published from Sir Almroth Wright's laboratory in London the first reports of the successful treatment of hay fever by active immunization. Despite the tremendous amount of work done by American and European investigators since that time, many practical problems remain unsolved. The solution of these are essential before the aims of treatment can be more successfully achieved. It is true as Feinberg [3] has emphasized in a recent report on the progress in hay fever therapy that most workers are now obtaining some degree of relief or improvement in a much larger percentage of their patients, but that wide differences exist in the results of even those physicians who are devoting much time to this work is quite apparent from their recent publications. This great discrepancy in the results of treatment are to be sought, in the main, in the absence of a standard method of pollen extraction and of biologic assay and in the lack of knowledge concerning the best route of inoculation, the relative merits of preseasonal, coseasonal and perennial desensitization, and lastly, in the period over which treatment should be extended. It is my purpose to discuss briefly some of these problems.

The occurrence of group reactions in pollen sensitization in a large percentage of patients has often made the selection of the appropriate pollen or pollens for treatment very difficult. Because the pollens of closely allied families of plants have in common a characteristic structural arrangement of the protein molecule it is the rule, for example, that patients sensitive to Kentucky blue grass or rye grass also give reactions to many other members of the Gramineae family. But treatment to be successful must be carried out with the pollen in the patient's environment, the period of pollination of which corresponds with the patient's symptoms. This conclusion would seem to be justified on the basis of good clinical observation, although it is true that there is some experimental evidence to controvert it.

One of the great obstacles to the development of a standard method of hay fever therapy is the lack of a standard method of extracting pollen protein and of a standard method of biologic assay of these extracts. There is as yet no United States standard of potency. The original Noon pollen unit expressed in quantity of pollen toxin which can be extracted from the thousandth part of a milligram of pollen is still in use. But the term "pollen unit" conveys no information, because the effective strength of an extract depends on the quality and purity of the pollen used and on the method of its extraction. The determination of the potency of an extract based upon its nitrogen content has not been found a reliable method of standardization by all workers. Indeed there is still some question whether the antigenic properties of a pollen extract go hand in hand with its nitrogen content. At present the effective strength of an extract can be measured only clinically. The initial dose can be determined by the reactions obtained when the patient is tested to various dilutions of the antigen. Further increments are made only until a dose is reached which gives the patient relief of symptoms, for as Rackemann [4] has shown, success in treatment demands a course of doses of a size and extent which is optimal for the patient.

The subcutaneous route of injecting pollen antigen used in the original work of Noon has been employed by most workers. In recent years Phillips [5] has called attention to certain advantages of the intradermal method of injection, particularly in very sensitive patients in whom constitutional reactions are feared and in those in whom coseasonal treatment is desirable. Further studies of the value of intradermal injections should be made because, as Kämmerer [6] suggests, our knowledge of the epidermis as an immunologic organ is still meager, and it may be theoretically possible that a more effective desensitization may be attained by this route than by the subcutaneous one.

Whereas treatment before the season is the method of choice in most instances, it should at times be supplemented by coseasonal and perennial treatment. As Vaughan [7] and others have emphasized, the injection of small amounts of pollen extract daily or every other day during the season frequently produces great amelioration of symptoms not only in patients who first present themselves during the season, but also in those who have not been improved by preseasonal inoculations.

The rationale of coseasonal treatment by the short interval method is well supported by what we know of the mechanism underlying induced hypersensitiveness produced in animals by the inoculation of antigenic substances. Multiple injections of a protein antigen given to a normal animal at short intervals causes the formation of antibodies in much larger quantities so that when the same antigen is given to such an animal later the excess of circulating antibody combines with it and thus prevents the contact of antigen with

the sensitized cells. It is not unlikely that an increased tolerance to the inhalation of large amounts of pollen protein during the season may be accomplished by bringing about a similar state of desensitization in the hay fever patient.

A further improvement in the management of these patients has been recommended by Brown.[8] This worker suggests that the hay fever patient be treated throughout the year so that the tolerance to pollen protein which has been built up by preseasonal and coseasonal treatment be maintained. This makes it unnecessary to start the treatment each year as though the case were a new one. The chief precaution essential in using the annual treatment is the careful observation of the patient after each injection while the interval between treatments is being lengthened or when a change is made from an old extract to a new one. In a limited experience with this procedure we have been impressed with the uniformly good results as compared with those obtained by the preseasonal or coseasonal methods alone or in combination. Because of our meager knowledge of the immunology of hay fever, it is as yet impossible to say whether or not perennial inoculations produce a more prolonged state of desensitization of the body cells.

Concerning the duration of hay fever treatment there is as yet no agreement among physicians. However, as time passes and the number of patients treated thoroughly and repeatedly for many seasons accumulates, it becomes possible to formulate some idea as to the period of treatment necessary to achieve more permanent relief. Henry[9] states that successful desensitization for three to five seasons frequently gives permanent immunity; whereas Walker,[10] in the analysis of a series of one hundred "apparently cured" hay fever cases, treated only preseasonally, has been successful in obtaining freedom from symptoms for three or more years.

SAMUEL H. HURWITZ, San Francisco.

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Medicine

A Method of Obtaining Blood of Small Infants for Examination.—In a review of the literature, I find no mention made of a technique that I have found simple and adequate in collecting the blood of small infants for serological examination. Puncture of the longitudinal sinus seems to be falling into disuse. Nor does the jugular vein always offer an easy avenue of approach. One also often finds it difficult to obtain an adequate supply of blood from a puncture made in the heel. The use of one of the veins of the cubital fossa proves an easy method in the hands of the experienced, but is frequently a time-consuming procedure.

The superficial temporal vein I have found readily accessible. The vein may be easily occluded as it passes over the zygomatic arch by pressure of the finger of an assistant. With the struggling of the infant the vein becomes quickly more tensely filled. The hair may be shaved over a space of about one centimeter in diameter and the skin sterilized with alcohol. The use of iodin in sterilizing the skin renders the vein less easy to see. A three-quarter-inch needle, twenty-three gauge, I have found most serviceable, and the use of a syringe of not too large bore eliminates the annoyance of air-bubble formation from too great suction.

CHRIS R. HALLORAN, Los Angeles.

Urology

A Consideration of Certain Phases of Pyelitis.—Recent literature on the subject of pyelitis is so voluminous that it seems worth while briefly to emphasize a few of the points that are coming into prominence at this time.

Focal infection and urinary stasis are common causes. Stasis connects pyelitis closely with stricture of the ureter, but the latter can exist without pyelitis. Hunner states that 30 per cent of ureteral strictures have normal urinary findings, while one report records 69 per cent of sterile urine cultures in this condition.

The pathology is indicated by a variety of names: pyelitis, pyelocystitis, and pyelonephritis. The inflammation varies from a catarrhal one of the mucous membranes to a true nephritis which may destroy the kidney. Focal infection not only causes the infection but it may also cause the obstruction which results in urinary stasis—most often a ureteral stricture.

The Mayo Clinic reports two thousand cases of pyelonephritis in which stone was present in only thirty and only twelve required operative removal.

Hematogenous infection is most common, but other routes of infection probably frequently occur, especially the ascending route. Because of this, pyelitis is generally bilateral. In addition, there is a distinct type of unilateral pyelonephritis which sometimes demands nephrectomy. This is usually the result of septic infarction and will not be further considered.

The disease is most frequent at the extremes of life and in the female sex. It occurs in girls three times as often as in boys; in women twice as often as in men. From fifty to sixty, the occurrence in men and women is equal, due to an increase at that age of lower urinary tract obstruction in the male. Early female preponderance will be brought out in a consideration of the clinical types of which we will limit ourselves to three forms.

THREE FORMS OF PYELITIS

Neonatal pyelitis occurs in the new-born and is carried under this heading during the first month of life. It is not so uncommon. Males are more commonly found in this group than females. In twenty-one cases there were sixteen males. The organisms found are usually other than *Bacillus coli*. The symptoms are largely gastro-intestinal and often begin on the second or third day of life. Hence the true condition is overlooked and much useless interference with the diet results.

That the sexes are about equally involved and that *Bacillus coli* is uncommonly found, distinguish neonatal pyelitis from the pyelitis of infancy and point to a bacterial invasion at the time of birth or even to an intra-uterine infection. Treatment by water and alkalis usually results in a cure.

Pyelitis of Infancy.—In contradistinction to neonatal pyelitis, this form is predominantly one of females and of infection with the *Bacillus coli* group. Gastro-intestinal disturbances of a diarrheal type are so frequently an antecedent cause as to give the disease at times a seasonal character. It seems probable that infection is partly of hematogenous origin and, as such, occurs equally in both sexes; but the formation of the female genitalia, favoring vaginal soiling with feces, points toward an ascending infection as the cause of the predominance in female infants.

The upper respiratory tract is second in importance as a portal of entry for infection. Even here, *Bacillus coli* soon becomes a concomitant or a surviving organism or it may be that respiratory tract infections simply lower resistance and permit *Bacillus coli* to obtain a foothold. The rôle of infection in the pyelitis of infancy is easily grasped. Not so that of stasis; but stasis is present in some 80 per cent of these cases. In many, or most of them, the obstruction is probably self-engendered. The products of infection, together with the local reaction, cause blocking at the narrowest point, generally the ureteropelvic junction. This type usually recovers without instrumentation, but a permanent scarring and narrowing may follow. Hunner states "chronic pyelitis in children is probably subject to the same factors that govern the disease in adults. Inadequate drainage is the chief factor in chronic pyelitis, and ureteral stricture is by far the most common cause of poor drainage." Hunner's views may appear radical, but, considering the poor end-results that follow pyelitis of infancy, they are probably justified. The disease is extremely common. Eighty per cent of nursing babies are said to have had it and 20 per cent have relapses. One series of sixty cases is reported with only twenty cured. The disease is far more frequent than is recognized, and, while a symptomatic cure is usually obtained, with the subsidence of acute symptoms, the establishment of a chronic pyelitis frequently follows. The importance of this will be seen in the consideration of pyelitis of pregnancy. Routine treatment includes water, by all odds the most important aid; alteration in the reaction of the urine, and urinary antisepsis together with removal of foci of infection. Severe or relapsing cases should not be allowed to drag along without urological examination and treatment. Such examination will occasionally disclose tuberculosis, for instance, which is not so rare at this period of life. Relief of obstruction by means of ureteral catheterization, usually with addition of pelvis lavage with silver nitrate, will give immediate good results. While it may have to be repeated one or more times, it is surprising how often a cure results from the first treatment. Age is no bar to cystoscopy and ureteral catheterization. It can be done at any age and in either sex.

Chronic pyuria with or without recurring attacks of pyelitis is a positive indication for cystoscopy. Every effort should be made to obtain a normal urine before the child is discharged as cured.

Pyelitis of Pregnancy.—The first point of interest is the relationship of this type to the pyelitis of infancy. It is becoming increasingly evident that a large percentage of the cases of pyelitis of pregnancy have had previous attacks of pyelitis of infancy, usually associated with some degree of urinary obstruction. It seems reasonable to conclude that such cases are predisposed to pyelitis of pregnancy. This is an added reason for the thorough treatment of pyelitis of infancy. The second point of interest is the almost universal presence of dilated ureters in pregnancy as a result of the pregnancy itself. One autopsy series of sixteen cases shows dilatation present in all; bilateral in twelve and unilateral in four. Another series of three hundred autopsies, including both pregnancy and the puerperium, shows dilatation of the upper urinary tract present in 30 per cent. Clinically, 80 per cent of pregnant women have residual urine in the ureters; but only 10 per cent of these have pyelitis. The cause of this dilatation must be the enlarging uterus. If this dilatation takes place in the presence of a residual pyelitis of infancy, it is only natural that the old infection will flare up. Many cases must be fresh infections of the residual ureteral urine which results from the pregnancy itself. *Bacillus coli* is again the common organism and checks with the aphorism that a pregnant woman is a more constipated biped and a parturient woman a most constipated one. It is usually stated that the condition is generally unilateral, and most often on the right side; but this is more apparent than real. Kretschmer's careful bacteriological study shows: bilateral, twenty; right only, five; left only, none.

Considering the frequent presence of an organic factor in the production of stasis it is important that these cases be followed up after the termination of pregnancy to make sure that a chronic condition is not left untreated or uncured.

Differential diagnosis from appendicitis is frequently necessary.

Urological treatment should not be too long postponed. Ureteral dilatation, with pelvic lavage, usually results in rapid amelioration of symptoms. Sometimes the use of an indwelling ureteral catheter is desirable. It may be left in place for many days if necessary. It should never be necessary to terminate a pregnancy because of pyelitis.

In conclusion, we wish to emphasize the need of using all available means to really cure every case of pyelitis.

E. J. EYTINGE, Redlands.

Medicine

Psittacosis.—The number of cases of "parrot fever" which have occurred in this country during the past few weeks has not been large enough to cause serious concern, but the novelty of the malady is such that the reports have had a high news value.

The disease has been known for at least fifty years, and is described in all the standard textbooks dealing with tropical medicine. Perhaps the earliest description of the disease was written by Ritter in 1879, at which time he called attention to the factor of contact with an infected parrot. It was defined as "a fatal specific epizoötic disease" affecting parrots, and liable to be communicated to human beings. An incubation period of from seven to twelve days ushers in a typhoid-like condition sometimes beginning with a chill, though more often the onset is insidious. The duration averages from fifteen to twenty days unless pneumonia develops. This is a frequent and much to be dreaded complication. Almost all fatalities occur in pneumonic cases, where the mortality is found to have been between 30 and 40 per cent in some outbreaks.

Among recorded epidemics, the European one of 1892 would appear to be the most extensive. A shipment of 500 parrots had been made from South America to Paris. Of these, 300 died on the journey, but in spite of this the surviving 200 were sold. Within a month forty-nine cases of psittacosis were reported, with sixteen deaths.

During the next ten years nine smaller epidemics occurred in Europe, and one in New Hampshire, U. S. A.

During the present winter Berlin has reported more than twenty cases, with three deaths, and fifteen cases have been reported from other German cities. On January 16 the importation of parrots into North Germany was prohibited, the embargo to be effective immediately. On January 24 the importation of parrots from South America was forbidden by President Hoover on the recommendation of Surgeon General Hugh S. Cumming. Not only the present epidemic but all previous ones, both in Europe and America, have been traced to parrots imported from South America.

The difficulty of an early diagnosis is recognized, and one textbook naïvely remarks: "The diagnosis is to be made by the discovery of sick parrots in houses in which people are suffering from typhoid-like fever and pneumonia."

MARY L. NEFF, Los Angeles.

Gall-Bladder Disease Causes Most "Stomach Troubles."—"The most frequent single cause of 'stomach trouble' was disease of the gall bladder," Dr. Walter C. Alvarez of the Mayo Clinic, Rochester, found in five hundred consecutive cases of indigestion or abdominal distress reviewed before the American College of Physicians meeting at Minneapolis.

"Actual disease of the stomach could be demonstrated in only twelve of the five hundred cases," Doctor Alvarez stated. "As Dr. W. J. Mayo long ago pointed out, the stomach often serves as a fire box to call attention to a conflagration elsewhere in the body. In many of these patients the fire was far away, in the brain, the teeth, the thyroid, lung, heart, spine, kidney, bladder, uterus, or blood vessels."

Definite disease of the digestive tract, such as inflammation of the gall bladder, ulceration or cancerous changes in the intestines and stomach, or appendicitis was found in 175 cases or one-third of the total number.

"In forty-three cases the indigestion was thought to be due primarily to nervousness and in fifty more it appeared to be due to the congenitally frail, sensitive, or psychopathic make-up of the patient." Doctor Alvarez said. "In a number of cases it was due to the fact that husband and wife were at swords' points and the meals were being eaten to the accompaniment of bitter words. Often the patient was so nervous, and querulous, or so badly upset by fatigue and worry that it was hard to know what significance to attach to the symptoms, and the operation which would have been prescribed for a strong, phlegmatic person with the same complaints was hardly thought of."

Some of the patients complaining of stomach trouble were relieved by a simple change in diet. In other patients the cause of the trouble was thought to be in the nerves or brain, with the stomach distress merely secondary. For these patients, operation was not advised. Doctor Alvarez said further:

"In many cases the inability of the physician to make a positive diagnosis was due to the unwillingness of the patient to remain for a sufficient time under observation or to return when new symptoms appeared. Let us say that a woman has an attack of acute indigestion with pain in the upper abdomen and vomiting. It looks to her and her physician as if she must have eaten some spoiled food. But let her have four such attacks in six months with perhaps a little jaundice after one of them and it becomes obvious even to a layman that the biliary tract is probably diseased. The surest way in which to get a diagnosis is to return each time to the same physician so that he can see the complete picture of the disease; the surest way in which to get poor treatment is to change physicians with each attack and to show each one only one short puzzling episode in a long-lasting, slowly developing chronic disease."—*Victor News.*

TRANSACTIONS OF THE FIFTY-NINTH ANNUAL SESSION
CALIFORNIA MEDICAL ASSOCIATION

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This caption includes two committee reports, not included in the "Pre-Convention Bulletin" excerpts as printed in June issue of California and Western Medicine, pages 423 and 427.

HEALTH INSURANCE—A PRELIMINARY SURVEY*

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Acting upon your suggestion your Committee on Medical Economics has devoted its attention exclusively to the question of health insurance; and has, in the time allotted, been able only to investigate very incompletely a very few of the many angles of this most complex question.

OUTLINE OF THE SURVEY

In order to supply you with the information upon which you might take some action, your committee has made the following studies:

1. Experience of foreign countries in health insurance.

2. Investigation of the health at time of original examination, and the diseases and their duration, of five millions of men enlisted by the United States for service in the World War.

3. Study of the incidence of illness, duration of the disability, and the cost of hospitalization and treatment of various selected groups on manufacturing, industrial and transportation activities.

4. Investigation of certain mutual benevolent hospital associations that were founded and conducted with money secured by: endowments; entrance or initiation fees; and by monthly payment of dues.

5. Frequency, duration, and character of illness of certain groups of children of school age.

6. The cost of sickness to three thousand families from January 1 to July 1, a period of six months. The cost of sickness to these families, which range in number from one in family to ten in family, have been segregated into the following items: physicians' fees; drugs; dentists; hospitals; oculists; operations; nurses' fees; dispensaries and extra household expenses.

These studies have been condensed and epitomized as much as is consistent without loss of facts secured.

PRESENTATION OF SPECIAL STUDIES

Study of the Experience of Foreign Countries in Health Insurance.—Various plans for voluntary insurance have been abandoned, one by one, for types made compulsory under the law.

The standard of living and the standard of medical service is so different from those in the United States that studies of these appear to be of little value.

I have chosen the experience tables on which the health insurance tables of Great Britain were founded, although here again we find standards so different from those in our own country that they cannot be accepted as a guide. Between the ages of twenty and twenty-five years, 25 per cent are sick each year. The average duration of the sickness is three and seven-tenths weeks, which makes an average of one week for each person insured.

Between the ages of sixty and sixty-five, 40 per cent of all insured suffer from illness annually; and the duration of the illness at that age is sixteen weeks of illness annually for each person of that age insured.

I quote these figures to call to your attention how the duration and frequency of illness increases as the age of the insured advances.

While I have tables of all ages up to eighty-five years of age, it seems unnecessary to quote them because what has just been stated will illustrate clearly the futility of making calculations of medical costs of illness from records gained from certain selected groups of employees of various industries which will be given later.

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Study of Medical Care of Enlisted Americans in World War.—Statistics available as to the percentage, character, and duration of illness of the five million men enlisted by this country for service in the Great War are again of little value.

The conditions under which these men lived, so different from conditions during peace times, coupled with the fact that it was during their period of service that the world-wide epidemic of influenza occurred, make deductions of value impossible.

The fact that it took thirty thousand beds in 1924 in government hospitals to care for veterans entitled to treatment, for your purpose means nothing, because the government has no record of the sicknesses of those who served during the war unless they come under supervision when ill.

There is, however, one outstanding fact to be gleaned from our experience during the war that appeals to your committee as being peculiarly significant when considering a voluntary noncompulsory insurance plan, and that is this: that while every American soldier received automatically his enlistment compensation insurance, and life insurance had to be applied for, yet 90 per cent of all those enlisted paid for and received government life insurance; and as late as 1924 there were still 885,000 of those policies in force.

This would indicate that if the necessity for sickness insurance were properly presented in a forceful manner to the people of America that voluntary insurance would stand much better chance of success in this than in any other country in the world.

* * *

Study of Illness in Industry.—The frequency and duration of illness of employees in large industrial enterprises varies considerably with the nature of the work, location of the plant, and the age and sex of those employed. In a ten-year period, the male employees of the Edison Electric Illuminating Company of Boston had, on an average, slightly over one illness that caused absence from work per person per year for male employees, and two per year for females. In contrast, a large manufacturing concern had an average of over two cases of illness per person per year.

During a three-year period the 16,000 employees of the B. F. Goodrich Company, largely men, had an annual rate of illness per person of over one and a half cases of disabling sickness per annum.

Studies made in different places indicate that adult males lose seven to eight days per year per person, and that females lose eight to twelve on an average per year on account of sickness.

* This is the report of the Committee on Medical Economics which is referred to in the June issue of California and Western Medicine, page 427.

See also report of Dr. John C. Ruddock, which follows. Also special article in this issue by Dr. Rexwald Brown on "The Business of Medicine." These three articles interlock.—Ed.

Of 570,000 people in industrial communities studied by the Metropolitan Life Insurance Company, roughly two per cent were ill on the average of a single day.

On the basis of the lowest rate, for disabling illnesses, made by the United States Public Health Service, there would be about 130,000,000 cases of disabling illnesses in the United States every year, and if nondisabling illnesses be added, this figure would be tremendously increased.

On the basis of population, there would be in California over 5,000,000 disabling illnesses and probably 10,000,000 of nondisabling illnesses in this state each year.

* * *

Study of Mutual Benevolent Hospital Associations.—These associations range from the all too frequent fly-by-night concerns, controlled by one man or a small group, sometimes laymen, sometimes physicians, without material resources, operated for a profit, and guaranteeing treatment to the sick and hospitalization when necessary—to the old established institutions, philanthropic in character, with liberal endowments, extensive hospital properties, and with hospital staffs of reputable men.

The first type is familiar to all and has little or nothing to commend it. The second type, examples of which were established in this state as early as 1851, still conduct large modern hospitals with excellent staffs, present many features that have great interest that bear directly upon the question that you are considering. I will quote from carefully studied records of one such institution the following figures:

During the years of 1928 and 1929 there was an average membership of 9248, 70 per cent of whom resided in the city and county where the hospital is located, and a very large percentage of this 70 per cent unquestionably sought the services of their hospital or its out-patient department when ill.

During the two years mentioned, 2803 of the members were at some time patients in the hospital. The average stay in the hospital for a patient was 23.5 days and the cost per case was $103.

In the out-patient department there were 2400 visits to the x-ray department, 48,000 visits to the pharmacy, 3480 visits to the laboratory, and 7668 visits to the hydro- and electrotherapeutical departments.

The cost for hospitalization was $289,681; and the cost for the out-patient department was $90,642.

Administration expenses were $21,555.83; with a very small charge for depreciation, taxes and insurance; $419,378 was the total cost for two years' medical care, treatment and hospitalization for 9248 members. This means that it costs the organization $21.61 each year per member.

To further explain and analyze these figures, I will state that this particular society accepts into its hospital large numbers of pay patients who are not members of the organization and that these non-member patients are charged prices that give to the hospital a substantial profit.

I wish to emphasize that an examination into the accounting system shows that charges for the operation expenses are entered against the paying portion of the hospital so as to reduce the cost for the care of the members of the society wherever possible. In other words, the sum $22.61 per capita per annum would be considerably larger if the hospital were operated for members only.

I wish further to emphasize that this sum does not include any fees to the medical profession except a few modest salaries paid for supervision of x-ray and pathological departments, together with the resident physician's and interns' salaries, and possibly one or two very small staff salaries, as the staff as a rule serves without financial remuneration. No obstetrical service is given to members.

The outstanding fact of value to you is that this institution, if it charged $22.61 per person per annum for medical care without medical or surgical fees, would soon be bankrupt were it not for the fact that it has a return from investments from its endowments and gleans a profit from outside non-member pay patients.

* * *

Study of Illness in Children of School Age.—The frequency and duration of illness among children of school age varies greatly. Your committee has not been able to secure accurate data in California, but in some eastern communities they average about seven disabling days of sickness per school year (180 days); whereas in some communities in the Middle West children of school age appear to have disabling sicknesses about six per cent of all days of the year.

* * *

Study of Cost of Illness in Group of Three Thousand American Families.—I am able to present a record of the cost of sickness to 3281 American families over a period of six months from the first of January 1929 to the first of July 1929.

These families are all above the poverty line, but cannot be considered in any way as representing financially the average California family. These families range, in numbers per family, from one to nine and over, and the expenditure being for a period of six months will have to be multiplied by two to secure the estimated annual expenditure.

Of the 3281 families studied there were:

198 families that made no expenditure for sickness.
1113 families spent less than $25.
654 families spent from $25 to $49.
655 families spent from $50 to $99.
397 families spent from $100 to $199.
135 families spent from $200 to $299.
55 families spent from $300 to $399.
36 families spent from $400 to $499.
38 families spent $500 or more.

Remember that these are expenditures for six months only. Of these families there were twenty with only one in the family and the average expenditure for sickness for six months was $72, which would be $144 per year per person.

One hundred and twenty-eight families, with two in the family, expended $82 for six months, or $164 per year.

Four hundred and fifty-five families, three in the family, expended $70 in six months, or $140 yearly.

Six hundred and eighty-five families, four in the family, expended $62 in six months, or $124 yearly.

Six hundred and twelve families, five in the family, $73 in six months, or $146 yearly.

Four hundred and sixty-four families, six in family, $60 in six months, or $120 yearly.

Two hundred and ninety families, seven in the family, $80 in six months, or $160 yearly.

One hundred and ninety families, eight in the family, $93, or $186 yearly.

Ninety-eight families, nine in the family, $50, or $100 yearly.

One hundred and twenty-one families, ten and over in the family, $82 in six months, or $164 yearly.

The average cost per person ranges from $6.64 to $75.63.

The expenses incurred by these families were arranged as follows:

Twenty-three hundred and sixty-eight employed a physician during the period of six months and the fees totaled $98,359, or a total of $37 per family for six months, or $74 per annum for physicians' fees.

Drug bills for 2755 of these families totaled $29,607, or $11 for six months, or $22 per annum.

There were 988 of the families who paid $18,108 or $18 per family to the dentist, or $36 per annum.

TABLE I. SUMMARY OF INCOMES OF PHYSICIANS IN THE UNITED STATES

	Gross Income	Net Income	Expense of Practice	Savings	Living Expenses	No. of Years in Practice	No. in Family	Doctors Who Own Homes	Doctors With Home Office	Ratio of Specialists to General Practitioners
Rural practitioners	$5,727	$3,284	$2,443	$1,257	$2,027	19.	3	72%	36%	1 to 34
Doctors in towns of 5000 population	7,513	4,800	2,713	1,549	3,251	22.5	5	80.9%	17.3%	1 to 3.6
In towns of 10,000 to 25,000	10,207	6,369	3,838	2,706	3,663	19.5	5	85.6%	10.2%	1 to 2
In cities of 50,000 upward	11,379	7,022	4,357	2,639	4,383	19.2	3	72.3%	9.9%	1 to 1.7
In metropolitan centers	11,227	7,125	4,102	2,203	4,922	15.	3	39.2%	29.9%	1 to 1.3
In industrial centers	9,921	6,235	3,686	1,468	4,767	19.8	4	78.3%	30%	1 to 2.5
Average for U. S.	$9,329	$5,806	$3,523	$1,970	$3,835	19.2	4	71.4%	22.2%	1 to 7.5

Four hundred and forty-seven of these families paid hospital bills of $28,708, or $60 per six months, or $120 per annum per family.

Three hundred and eleven families paid the oculist $4815, or $15 per six months, or $30 per annum.

There were 212 operations, the fees for which were $15,779 which was an average of $74 per family for six months, or $148 for one year.

Two hundred and twelve families paid nurses' fees of $8766, or $41 per family per six months, or $82 per annum.

Extra household expenses on account of illness in 1886 families averaged $21 per family.

As will be seen from these figures, families of one, two, or three people expend more for sickness than families containing two or three times the number of persons.

It is not claimed that this in any way represents the cost of adequate care, but does give an idea as to the sums actually expended by people in extremely modest circumstances.

When we stop to consider that of all people who have attained the age of twenty years, that 89 per cent had measles, 70 per cent have had whooping-cough, 72 per cent mumps, 52 per cent chickenpox, 11 per cent scarlet fever, 10 per cent diphtheria; that there are 2,000,000 births in the registration area alone, of the United States; that on an average day there are 350,000 confined in hospitals for nervous diseases; that syphilis and gonorrhea cause one person out of a hundred to place themselves under the care of a physician; and that in a recent year there were 36,000 cases of smallpox, you will understand how futile it is to base any plan of sickness insurance upon the experience of industrial organizations furnishing treatment to adult males practically none of whom would be treated for any of these diseases or conditions.

Referring again to the cost of sickness in the three thousand families; if these figures are analyzed they show that in families up to four persons in number the actual cost per person was $76 per year. This in families of very modest incomes and the adequacy of the treatment questionable. Further it shows that the single individual spends about $145 per year for sickness which would be a little less than five per cent of a $3000 annual income.

It is to be remembered that these families are all urban families in the immediate reach of physician, hospital, nurse, and all the agencies that are brought into use for the scientific treatment of disease, and it is well to remember that the towns and cities of the great central valleys of this state in many instances are 150 to 200 miles distant from coast-line towns possessing medical facilities along the eastern border of the state; and that in the hilly and mountainous regions between the valleys and the coast, and between the valleys and the eastern borders of the state, there are many people who live from thirty to seventy-five miles from the nearest doctor; that to reach these people when ill, particularly in the winter time, requires travel over roads that are difficult, to points that not infrequently cannot be reached by automobile.

Treatment and care of such a patient under these conditions would add tremendously to the expense and could not be compared to that of the city dweller.

As the principal agitation for better medical service at lower costs is on account of the claimed inability of those of moderate income, the so-called white collar brigade, to meet the expense of illness, your committee sought to ascertain how many people in the State of California would come under this classification. Consulting the income tax department at the Custom House, we found that there were only 315,000 people in the State of California who filed statements of income, and that of this number only 185,073 pay any tax.

Of the 315,566 returns made, there were 12,585 that showed a net income of under $1000.

There were 75,500 who showed net incomes of over $1000 and below $2000, and

There were 71,000 that showed incomes above $2000, but below $3000.

This would make, according to the income tax returns, about 160,000 citizens in the state whose net incomes are below $3000.

Of course such figures are absurd, and yet there are many people of great wealth whose net income, after all deductions are made, in any single year, may be less than nothing.

As the California State Bureau of Labor Statistics is said to keep no figures on the employees of enterprises that employ less than five people, any statistics for your purpose on the size of salaries in the state would prove as useless as the figures from the Federal Income Tax Bureau just quoted.

One of the plans submitted to your committee that has a possible solution of the problem of furnished adequate medical care to the individual of small income at a price that he could afford to pay was presented by a member of your Council, Dr. F. R. DeLappe of Modesto.

The chief feature of the plan suggested consists in making each County Hospital an open hospital for all reputable members of the medical profession.

The County Hospital would establish a department, or preferably a separate building, where a charge of $3 per day would be made for hospital care. The patient would be attended by his private physician and the physician would submit a bill for fees, which would be one-half the amount customarily charged.

The bill would be submitted to and approved by the accounting and welfare departments of the hospital and then passed on to the patient for payment.

If it is a real condition that confronts us, this might be a very practical way to meet it, and after consultation with various interested people and heads of health departments, we submit it for consideration and discussion.

In view of the fact that the National Committee on the Cost of Medical Care has only published existing data that it has collected and that its researches for facts concerning this problem hitherto unknown, is only fairly well begun, your committee feels that the data they will be able to furnish as their work progresses will, when received, be of the greatest possible assistance in the development of a successful system.

Statistics on physicians' incomes are included. (Published by courtesy of editors of *Medical Economics*):

From the all too meager facts that we have been able to gather, it appears to your committee that any action toward establishing a sickness insurance plan in the near future should first be tried out in some selected town or county; second, charge per capita per annum for those whose incomes range between $1000 and $2000 per annum should be far in excess of any sum so far considered as being practical.

In conclusion, as chairman of the Committee on Medical Economics, I desire to express my appreciation of the Council's liberality and confidence in authorizing me to appoint subcommittees and expend sums necessary to accumulate needed information on this subject.

I have not availed myself of your liberal offer because I did not feel warranted in expending the society's funds without greater assurance that the data collected would prove of real value and be put to practical use.

THE CALIFORNIA "CLINIC" PROBLEM

By JOHN C. RUDDOCK, M. D.
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At the fifty-eighth annual session of the California State Medical Association, held at Coronado May 6 to 9, 1929, a new constitution and by-laws was adopted for the Association. Chapter 8, Section 1, of the by-laws provides for the formation of certain standing committees, which were appointed by the Council at its one hundred and eighth meeting with the consent of the House of Delegates. This committee, consisting of Dr. Gayle G. Moseley, Redlands, Dr. Walter B. Coffey, San Francisco, and Dr. John C. Ruddock, Los Angeles, have made a survey for the purpose of ascertaining facts and figures relative to the insidious growth in the various communities of the state of the number of clinics, the part that they play in the social structure of the community, and the cost of that service to the community as it affects medical economics.

How This Survey was Made

This survey has been rather a stupendous task and the data that we have gathered has become rather difficult because of the interlacing of this clinic structure with other branches of medicine. The present survey, which this committee is very pleased to report, is as complete as is possible without a paid worker investigating personally each clinic. This investigation was done by mailing approximately 1500 questionnaires to various hospital groups, clinics, and organizations working under such a name, such as groups of doctors, and various medical service groups. Early in the investigation, however, it was necessary to subdivide the work, as the field was altogether too large for one investigator to complete in the allotted time. This grouping is as follows:

Group 1. Charitable clinics.
Group 2. Industrial clinics.
Group 3. Commercial clinics.

Industrial medicine being a particular and specialized branch of medicine, under the control of the Industrial Accident Commission and regulated by the State Compensation Insurance Laws, was purposely left out of this survey, in order that confusion of this branch of medicine with the clinic situation would not be made. This survey, therefore, will include statistics obtained from charitable, semicharitable, private, and commercial clinics operated now in the State of California. Unfortunately, there are no means by which we could obtain statistics, data, costs, and other figures from private clinics, because they refused to give them to us. There are many clinics in this state—charitable, semicharitable, private, and commercial—that are run under the supervision of osteopaths, chiropractors, naturopaths, and other cults, who have deliberately refused to give us any information whatsoever, with the statement that "we are not interested in any of the activities of the California Medical Association." However, we are able to give you figures on a sufficient number of clinics and clinic activities in the State of California so that a basis of costs may be approximately ascertained.

What Is a Clinic?

Definition of Clinic.—No better definition has been found than that in the Statutes of the State of New York, which is as follows:

"For the purpose of this article a 'dispensary' is declared to be any person, corporation, institution, association, or agent, whose purpose it is, either independently or in connection with any other purpose, to furnish at any place or places, to persons nonresident therein, either gratuitously or for a compensation determined without reference to the value of the thing furnished, medical or surgical advice or treatment, medicine, or apparatus, provided, however, that the moneys used by and for the purpose of said dispensary shall be derived wholly or in part from trust funds, public moneys, or sources other than the individuals constituting such dispensary and the persons actually engaged in the distribution of charities of said dispensary."

There is likewise a definition in the Statutes of the State of Massachusetts:

"For the purpose of this act a 'dispensary' is defined to be any place or establishment, not conducted for profit, where medical or surgical advice or treatment, medicine or medical apparatus is furnished to persons nonresident therein; or any place or establishment, whether conducted for charitable purposes or for profit, advertised, announced, conducted, or maintained under the name 'dispensary' or 'clinic' or other designation of like import."

* * *

Purposes and Development of Clinics.—There are two distinct purposes for which dispensaries have been developed:

1. To collect material for the teaching of clinical medicine.

2. As a means of furnishing free treatment to the indigent poor.

The first group, the teaching clinics, are a small group and their numbers run hand in hand with the number of medical schools. It is hardly consistent for a physician who has enjoyed the benefits of a thorough medical education, the average cost being about $10,000, to object to a clinic connected with a medical school on the ground that such a clinic lessens the financial returns from private practice.

In rural districts or small cities the poor form a relatively small percentage and are not segregated. Here, each individual physician assumes a certain share of the free work in the community without allowing this to become an overwhelming burden. As the cities have grown with the drift of population to industrial centers, the relative number of dependents has increased, and, what is more important, they have collected in certain quarters or districts. The physicians in these districts would be overwhelmed by charity work if they had to assume the entire burden, and likewise, if these sick poor were forced to pay for medical treatment, they would in turn be forced to a condition of living that would in itself tend to aggravate their physical condition. This is the underlying factor in the development of clinics and medical dispensaries. In other words, they are an attempt to meet the results of economic conditions. The system is in itself inherently wrong, for often persons are forced by it to accept private charity for what in reality is a condition for which society as a whole is to a large extent responsible. It should not be necessary for a few individuals and the medical profession as a whole to bear the burden of these economic conditions.

Outgrowth.—The outgrowth from the above purposes for which clinics have been organized has led to the development since 1910 and to the organization in this state of a large number of associated clinic groups. These clinics are maintained by hospitals, governmental and private health organizations, industrial and commercial establishments, trade-unions, courts and prisons, and charitable agencies. Besides these are "pay clinics" and "group clinics." In these two last named are gathered together a man with experience in general diagnosis and one or more specialists, with more or less complete equipment for providing medical service, all under single administrative control. While "group clinics" are not usually organized for the purpose of reducing fees, "pay clinics" charge fees approximately covering the cost of the service, including remuneration for the physicians. Quoting from the Committee on the Cost of Medical Care, Dr. Ray Lyman Wilbur, chairman, states: "There has been a tremendous growth in the number of clinics from about six hundred in 1910 to almost six thousand in 1926."

Somewhat different from the clinic is the health center, which promotes and coördinates medical service and related social service and educational work. It brings together under a single roof a large number of previously scattered activities for the prevention of disease, and the promotion of health. In our large communities there have been developed a great number of health centers. These have been both under city and county control. Their primary function is educational health surveys, and irradication of communicable disease. They offer to the public free of charge services in regard to:

1. Treatment of venereal diseases.
2. Diagnosis and treatment of tuberculosis.
3. Advice in regard to baby welfare.
4. Vaccinations against smallpox, diphtheria, scarlet fever.
5. Dental care.
6. General advice in regard to all health problems.

California Laws Regarding Clinics

Licensing of Clinics.—In the State of California there is no law or statute that determines, specifies, or controls the number or the kind of clinics. Any individual in this state may start a clinic at any time he desires for any purpose that he may desire at any place that he may desire. This clinic may be owned, controlled and standardized by any lay individual. It might be of interest to note that all regulation of existing clinics is done by their respective boards of directors. Therefore, we have as many clinics doing as wide a variety of medical work as we have varieties of boards of directors. There is no set standard of any kind adopted or followed by the clinics of this state. This is not strange when compared with the rest of the nation.

In order to secure information concerning the state laws governing the licensing and control of out-patient departments of hospitals, clinics and dispensaries, letters were sent to all the state departments of health. Replies have been received from thirty-nine states. Thirty-six of these have no state laws regulating the licensing and supervision of out-patient dispensaries. New York, Ohio, and Massachusetts, all have regulating statutes for clinics. In New York all the dispensaries are under the supervision of the State Board of Charities, which has power to license them and to regulate their management. In Ohio the State Department of Health has authority to license and require reports from all hospitals and clinics. In Massachusetts a law enacted in 1918 authorized the State Department of Health to license all dispensaries and to establish regulations concerning them.

* * *

A copy of the General Acts of Massachusetts, 1918, Chapter 131, page 106, is as follows:

"Chapter 131. *An act to require that dispensaries shall be licensed by the State Department of Health.*

Be it enacted, etc., as follows:

Section 1. For the purpose of this act a dispensary is defined to be any place or establishment, not conducted for profit, where medical or surgical advice, or treatment, medicine, or medical apparatus is furnished to persons nonresident therein; or any place or establishment, whether conducted for charitable purposes or for profit, advertised, announced, conducted, or maintained under the name 'dispensary,' or 'clinic,' or other designation of like import.

Sec. 2. It shall be unlawful for any person, firm, corporation or association, other than the regularly constituted authorities of the United States, or of the commonwealth, to establish, conduct, manage or maintain any dispensary, as above defined, within the commonwealth, without first obtaining a license as hereinafter provided.

Sec. 3. Any person, firm, association or corporation, desiring to conduct a dispensary shall apply in writing for a license to the State Department of Health. The application shall be in the form prescribed by the said department, and shall be uniform for all schools of medicine. There shall be attached to the application a statement, verified by the oath of the applicant, containing such information as may be required by the said department. If, in the judgment of the said department, the statement filed and other evidence submitted in relation to the application indicate that the operation of the proposed dispensary will be for the public benefit, a license in such form as the said department shall prescribe, shall be issued to the applicant. Licenses shall expire at the end of the calendar year in which they are issued, but may

be renewed annually on application as above provided for their initial issue. No license shall be transferable except with the approval of the said department. . . . The fees shall be paid into the treasury of the commonwealth.

Sec. 4. The public health council of the said department shall make rules and regulations, and may revise or change the same, in accordance with which dispensaries shall be licensed and conducted, but no such rule or regulation shall specify any particular school of medicine in accordance with which a dispensary shall be conducted.

Sec. 5. The commissioner of health and his authorized agent shall have authority to visit and inspect at any time any dispensary, in order to ascertain whether it is licensed and conducted in compliance with this act and with the rules and regulations established hereunder. After thirty days' notice to a licensed dispensary and opportunity to be heard, the said department may, if in its judgment the public interest so demands, revoke the license of any dispensary.

Sec. 6. Dispensaries legally incorporated or in operation in this commonwealth at the date of the passage of this act shall, on application, be permitted to continue in operation for the remainder of the calendar year without fee. The said department is hereby directed to cause an inspection to be made of all such dispensaries prior to the thirty-first day of December in the current year.

Sec. 7. Any person, firm, association or corporation advertising, conducting, managing, or maintaining a dispensary as defined in this act, unless the same is duly licensed under this act, and any person, firm, association, or corporation wilfully violating any rule or regulation made and published under the authority of this act, shall be guilty of misdemeanor, and, on conviction thereof, shall be punished by a fine of not less than ten dollars nor more than one hundred dollars. A separate and distinct offense shall be deemed to have been committed on every day during which the violation is given in writing by the said department to the authorities of the dispensary concerned. It shall be the duty of the commissioner of health to report to the attorney-general any violation of this act.

Approved April 2, 1928."

How Other States Handle Clinics

Excerpts From Letters Received From Different State Boards of Health

1. Arizona: "Social service centers in larger towns supervise the clinics."

2. Arkansas: "State Health Department operates no clinics except on free basis for those unable to pay. Clinics established by private or official agents or hospitals not coöperating with State Board of Health have their own policies, according to the directors in charge."

3. Colorado: "There is no state law providing distinctly for clinics and outdoor treatment. However, there are several health and welfare units which conduct clinics at various times and places simply by regulation and agreement, but not distinctly by statutory provision."

4. Georgia: "Not licensed or supervised."

5. Idaho: "Supervision of hospitals and clinics is by county health board or the respective boards of county commissioners."

6. Illinois: "Local communities, under the police power of the state may establish and regulate clinics, dispensaries and out-patient departments by ordinance."

7. Indiana: "Clinics and dispensaries in cities are under supervision of city health departments and subject to such regulations as the health departments may adopt. Same is true of out-patient departments of city hospitals. Private hospitals conduct their out-patient departments under such rules and regulations as the hospital governing boards adopt."

8. Kansas: "So far as I know, the hospital itself regulates and provides for the medical attention given the clinic patients."

9. Michigan: "Supervised only by the management of the various hospitals to which they belong."

10. New Hampshire: "Hospitals have supervision over any work relating to hospitals; tuberculosis clinics under supervision of New Hampshire Tuberculosis Association. Venereal Disease clinics under supervision of the State Board of Health."

11. North Dakota: "Not supervised at this time."

12. Oregon: "Practically no supervision of these clinics. However, they are usually conducted by members Oregon State Medical Society. There are one or two outlaw clinics having no supervision whatever."

13. Pennsylvania: "Department of Welfare shall make necessary investigation to ascertain whether any dispensary, clinic, or hospital applying for a charter is needed in the community, opinion of the department shall be forwarded to Court of Common Pleas, but shall not be final in decision re granting of charter."

14. Rhode Island: "Controlled by the respective hospitals."

15. Texas: "(1) City clinics for treatment of indigent sick under city health departments. (2) Out-patient departments of hospitals are under jurisdiction of hospital which must be registered; only licensed physicians are supposed to conduct examinations and treatments. (3) Concerning private clinics operated by groups of physicians, the only requirement is that physicians be registered M. D.'s."

16. Virginia: "Most of the clinics are connected with either medical colleges, general hospitals, or the City Health Department."

17. West Virginia: "Very few out-patient departments of hospitals. Bureau of Venereal Disease (State Department of Health) has supervision of twelve venereal disease clinics; tuberculosis clinics are supervised by the State Tuberculosis Association; preschool clinics are supervised by the respective divisions of the State Department of Health."

18. Wisconsin: "Such regulations as are imposed are of local origin through city councils or county boards."

A survey of this character quickly brings out the fact that there is a very marked duplication of work of the various clinics in any large community. There have been a few surveys made attempting to compile the existing material for the health problems of a community. These surveys have all been under departments of social welfare or community chests. There is no data available that would specify or attempt to state when a saturation point in regard to clinics and hospitals has been reached. This saturation point is naturally a fluctuating one, dependent first upon the rate of growth of the community, and secondly, the fluctuations of the economic situation in that community.

Some Clinic Evils

Evils That Regulate the Number of Clinics in a Community.—1. Religious organizations are vying with each other, and establishing competitive clinic groups in the same locality, which necessitates separate estab-

lishments, separate capital investments, separate staffs, separate nurses, separate social service departments.

2. Social groups, such as women's clubs, fraternal organizations, likewise establish health centers and clinics as a part of their social welfare program and in order to justify their existence.

3. Politics also is a factor in establishing unnecessary organizations and groups.

* * *

Social Service Agencies.—Social service groups have developed because economic dependency goes hand in hand with physical and mental disease, ignorance, crime, juvenile delinquency, and a combination of these factors results in misery and premature death. The social service groups have been responsible for the development of the clinic situation as we have it today. However, one must state that those clinics that are under large social service groups, such as community chests, are the best clinics that we have in this state today. They have attempted in a meager way to set standards for these clinics, both economical and medical. They, however, are responsible for a great many unnecessary clinical groups. They are responsible for such health surveys as are available for any community at the present time. The medical profession has not seen fit to make such health surveys and surveys of medical facilities in this state. Social welfare is well organized. They have a well-organized department as a part of the state offices, the Department of Social Welfare, and in the large cities there is also established subsidiary offices of this department. They have established sets and standards of procedure in regard to various activities, and no social service groups can organize without the sanction of this department. There has, therefore, come to be recognized a profession known as a medical social worker. This profession has been developed with the development of clinics where it is necessary to have social investigations in regard to clientele patronizing such places. This is the crux of the situation. Who is eligible to attend these clinics? We often feel that many people attend clinics who should not do so. In order to ascertain those eligible for service at a clinic many factors must be taken into consideration, and only one who is trained in this investigation can possibly ascertain the facts of eligibility. A survey made at the Washington University Dispensary at St. Louis revealed that the number of people who take advantage of clinic work that are not entitled to it is small and but two per cent. This percentage varies with the efficiency of the investigation given each dependent patient. Various means suggested to eliminate this two per cent are impractical. Quoting from a statement prepared by Michael M. Davis for the Public Health Federation of Cincinnati, Ohio, concerning the patient's ability to pay:

"Medical service in hospitals and clinics needs to be regarded from four points of view:

(a) That of *the patient* who needs certain medical service.

(b) That of *the community,* which is interested to see that patients secure what they need even if they are unable to pay for it.

(c) That of *the physician,* who is the main professional agent in rendering medical service.

(d) That of *the hospital or clinic,* the institution which administers the service.

Fees Paid by Clinic Patients

On what basis should the ability to pay for medical service be determined?

There are three primary elements to be considered:

1. *The income of the patient or family* considered on an annual basis.

2. *The size and constitution of the family,* affecting as these do, the necessary expenses.

3. *The cost of the medical service* required by the patient.

Emphasis needs to be laid on considering irregular or seasonal earnings in the estimation of annual rather than monthly or weekly income, of including supplementary as well as main sources of income; and of ascertaining debts and other financial obligations.

The paying ability of a family is substantially affected by its constitution. A family of adults, for example, differs decidedly in its needs from one with the same income composed of parents with several young children. Elderly parents or relatives who must be supported may have to be considered as part of the family group even though they reside elsewhere.

The diagnosis of a disease may cost, at private rates, from a few dollars to several hundred dollars. The cost of treatment varies even more widely. Obviously, the ability of a patient to pay depends not so much upon his financial resources as upon the relation between his resources and the cost of the services which are required. The duration of an illness must also be considered, both as affecting expense and also as causing loss of income if the patient is a wage-earner.

Patients ordinarily able to pay for private medical care may be temporarily in the clinic or ward group because of accident or misfortune. Patients may be able to pay for private care or full hospital rates for a minor or short illness, whereas for a major operation, or for an illness requiring specialized or expensive service they would fairly receive care at reduced or free rates in a hospital or clinic. On the other hand, the paying ability of a family may be increased by judicious budgeting or arrangements for time payments.

Great stress should be laid on the importance of a skilled person in immediate charge of the admission of patients. The qualities needed are tact, business sense, training and experience in interviewing and managing people, and knowledge of living conditions, and community resources.

There are certain medical situations, such as emergency cases, and cases of communicable disease, which override financial considerations, and require the admission of the patient for at least one treatment."

The Clinic Problem Is an Urban Problem

The Clinic Is a City Problem.—The clinic problem affects only large centers of population.

* * *

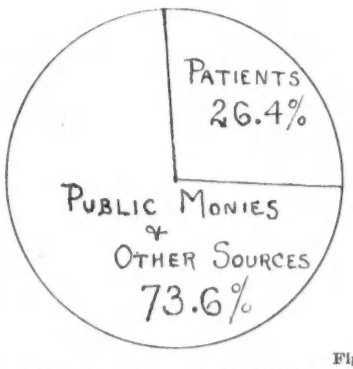
Location of Clinics.—It has long been felt that a clinic should be placed in that part of the city or community where the laboring classes are housed or where the population is thickest with that class of people who might be eligible for clinic service. In order to investigate this phase of the problem a clinic was selected in the city of Los Angeles which was located in the railroad yards at the edge of a Mexican district in a portion of the city which was almost inaccessible by street car from other portions. A map was kept and pins were inserted for each new patient that applied at the clinic for a period of two years. The results were very surprising. It was found at the end of this period of time that the pins were evenly distributed throughout the entire city and surrounding suburban districts without any regard as to the locality of that clinic. Unfortunately it was realized

at the time the survey was completed that 50 per cent of the patients attending this clinic were referred through a religous welfare organization. However, the conclusion that the essential feature in location of a clinic is that it be located in the community at a point that is easily accessible to street car service, is justified.

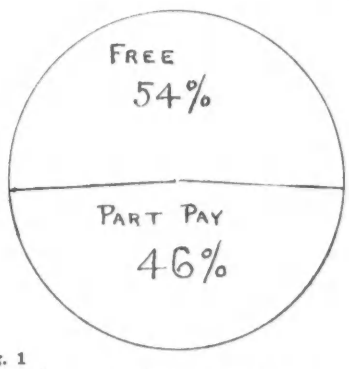
Cost of Clinics.—The personnel involved in rendering service to any one patient applying at a clinic is as follows:

1. Director or manager of clinic.
2. Social service worker.
3. File clerk.
4. Nurse.
5. History clerk (usually volunteer).
6. Doctors (volunteer, usually more than one).
7. Laboratory technician.
8. Janitor.
9. Field social worker.
10. Various workers connected with central office of social service branches.

The cost of caring for patients in any clinic is dependent on the total number of indigents visiting that clinic. There must be a sufficient number to justify the number of the personnel necessary to run the clinic. A small clinic, then, becomes a rather formidable economic problem.



Percentage of moneys collected from patients attending charitable clinics in the State of California in relation to the total income of clinics.



Percentage of free and part-pay patients attending charitable clinics in the State of California.

Fig. 1

Operation Costs

Cost of Operation.—The average total cost per charitable clinic in the State of California is $12,398.50. This includes 175 charitable clinics, and does not include the emergency hospital services of either Los Angeles or San Francisco. The average total income received from patients per clinic is $1680.25. Now, inasmuch as there are 6870 average visits per year for each clinic, then the average amount collected per visit would be $0.259. Inasmuch as $1680.25 is the average amount that each clinic collects from patients, and 54 per cent of these people are free patients, then the average amount collected from those individuals who pay is $0.479. This, however, is not the total cost per visit, which is $1.78. The clinic patient, therefore, pays 26.4 per cent of the total cost of his care. This average was ascertained from a computation of the total costs of all the charitable clinics in the State of California, and the number of visits made to these clinics.

The source of moneys for the operations of clinics and dispensaries, in addition to that paid by the patient, which amounts to 73.6 per cent, is derived from the following sources:

(a) Taxation and public moneys.
(b) Voluntary contributions and donations.
(c) Drives and subscriptions.
(d) Endowments.
(e) Private resources.

The greater portion of this money is derived from taxation and public moneys, subscriptions, and drives. The exact percentages are not available.

How, then, is this money spent?

Eighty-three cents of every dollar spent in the administration of charitable clinics goes toward salaries of the personnel necessary to conduct the clinic. Seventeen cents of the dollar is spent in rent, taxes, interest, and incidentals. Medicines are sold at cost, laboratory work is done at cost, and the services of the physicians are gratis, with the exception of those clinics run in connection with medical schools and government institutions, where the doctors receive a salary for services rendered. One can easily see, then, from the above that, in order to pay doctors for services in charitable clinics, there must be a complete reconstruction of the economic administration of these clinics, or else there must be collected from the patients attending these clinics an additional sum of money necessary to pay the physicians adequately. Under the present methods of clinic administration this appears to be practically impossible, unless some solution or plan can be arrived at in order to cut down the tremendous overhead occasioned by a large administrative personnel.

In order to show more clearly the above point, comparison is here made between San Francisco County and Los Angeles County.

County	Number of Clinics	Number of Visits	Cost
San Francisco	14	452,229	$ 504,345.78
Los Angeles	134	489,286	1,250,305.09

Although there are approximately the same number of visits made to clinics in San Francisco County as in Los Angeles County, there is a great difference in

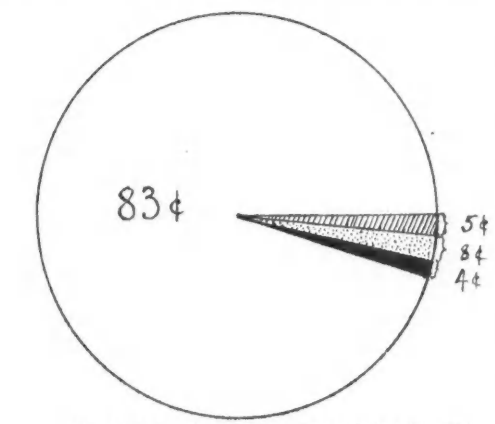


Fig. 2.—How the average clinic dollar is spent

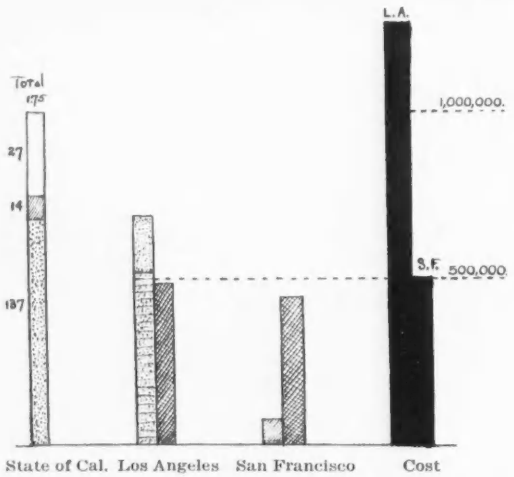


Fig. 3.—Diagram showing some relative comparisons for state as a whole, Los Angeles and San Francisco

Total cost comparison between Los Angeles County and San Francisco County
Number of visits made to clinics
Health centers
Other clinics in State of California
San Francisco clinics
Los Angeles clinics

cost. (The above figures do not include the San Francisco or Los Angeles emergency hospital service.) The average cost per visit for Los Angeles County charitable clinics is $2.55. The average cost per visit for San Francisco County charitable clinics is $1.11. The reason for this discrepancy is the fact that there are too many clinics in Los Angeles County. Centralization of clinical work into large clinics would very materially cut down such a stupendous overhead. In Los Angeles County 106 of the 134 clinics are under the jurisdiction of the various health departments. In San Francisco County two of the fourteen clinics listed are under the jurisdiction of the health department.

Medical Profession Must Lead in Regulation of Clinics

Standard of Medical Practice.—Much criticism is dealt the clinics in large localities by the medical profession, and practically all criticism is to the point that clinics usurp the patients of private doctors. Such criticism at the hands of the doctors does not help to curb the number of clinics in a locality, nor does it help to decrease the cost of medical care as it concerns the community at large. All of the charitable clinics that have reported in the state of California have well-organized social service departments for investigating the eligibility of patients attending clinics.

The standard of medical practice as carried on in a great many clinics is not a credit to the medical profession. Because of lack of time and inadequate number of doctors attending the clinics, examinations are hurried, incomplete, and inadequate records are kept. Because the service of the physician is volunteer, only those members of the profession are available who are able to give time from their practices. Many of the more desirable doctors of the community are therefore not available. If the clinics were required to give the highest type of recognized medical service to the patients attending them, then many of the poorly conducted smaller institutions would be forced to close their doors.

The plea, then, would be to raise the standard of medicine in all of the charitable clinics of the State of California. The medical profession from time immemorial have been the leaders in matters of public health and public medicine. The clinic situation has grown so fast in late years that it is almost out of control, and unless the medical profession regulates the standard of medical practice for these institutions, then the social service departments will regulate it for them.

Types of Clinics in the State of California

(1) Charitable clinics, 80 per cent.

(2) Private clinics, 9 per cent.

(3) Commercial clinics, 11 per cent.

Note: This survey does not include those clinics and out-patient departments coming under the jurisdiction of the Compensation Insurance Act.

Some California Clinic Statistics

A. (1) Charitable clinics in the State of California, 175.

(2) Total visits made to these departments for one year (175 clinics), 1,195,390.

(3) Total number of free patients seen, 646,110.

(4) Total number of new patients seen for these clinics, 235,470.

(5) Total amount of money collected from patients, $290,679.25.

(6) Total cost of operation of these clinics, $2,132,555.01. Average cost per visit is $1.78.

B. Charitable clinics are located in the following cities:

Alameda, Belmont, Berkeley, El Monte, French Camp, Loma Linda, Long Beach, Los Angeles, Martinez, Monrovia, San Diego, Oakland, Orange, Pasadena, Riverside, San Francisco, San Bernardino, Sacramento, Stockton, and Visalia.

C. Health departments maintain clinics in the following counties:

Los Angeles, San Francisco, San Joaquin, Santa Barbara, Tulare, Ventura, Alameda, Contra Costa, Madera, Orange, Riverside, Sacramento, San Bernardino, and San Diego.

D. Counties where hospitals maintain no out-patient departments separately.

Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, Eldorado, Fresno, Glenn, Humboldt, Imperial, Inyo, Kern, Kings, Lake, Lassen, Marin, Mariposa, Mendocino, Merced, Modoc, Mono, Monterey, Napa, Nevada, Placer, Plumas, San Benito, San Luis Obispo, Santa Clara, Santa Cruz, Shasta, Sierra, Siskiyou, Solano, Sonoma, Stanislaus, Sutter, Tehama, Trinity, Tuolumne, Yolo, and Yuba.

E. Private clinics in the State of California are as follows:

(Costs on these clinics are not available because many of the managers or owners could or would not give them to us.)

Alameda County:
Hayward Clinic.....Hayward

Fresno County:
Fresno Clinic.....Fresno

Monterey County:
Grace Deere Metabolic (in construction).....Monterey

Orange County:
Johnson-Wicket Clinic.....Anaheim
San Clemente Hospital and Clinic.....San Clemente

Riverside County:
- Riverside Clinic — Riverside

San Bernardino County:
- Savage Clinic — San Bernardino

Santa Barbara County:
- Santa Barbara Clinic — Santa Barbara
- Clinic of Medical Arts — Santa Barbara

Sonoma County:
- Santa Rosa Clinic — Santa Rosa

Yolo County:
- Woodland Clinic — Woodland

San Diego County:
- Les Invalides — San Diego
- Surgical Clinic — San Diego
- Rees-Stealy Clinic — San Diego
- Children's Clinic — San Diego
- San Diego Clinic — San Diego
- California Clinic — San Diego
- Scripps Metabolic Clinic — La Jolla

San Francisco County:
- Free Service Clinic — San Francisco
- Greens' Eye Hospital — San Francisco
- Mount Moriah Hospital — San Francisco
- Western Medical Service Corporation — San Francisco
- Kearny & Geary Clinic — San Francisco
- F. Justin McCarthy and Staff — San Francisco
- La Societe Francaise de Beinfaisance Mutuelle — San Francisco
- German General Benevolent Society — San Francisco

Los Angeles County:
- California Clinic — Los Angeles
- Los Angeles Medical Group and Clinic — Los Angeles
- Roos Loos Clinic — Los Angeles
- Soiland Clinic — Los Angeles
- Children's Clinic of Los Angeles — Los Angeles
- Los Angeles Clinical Group — Los Angeles
- Monrovia Clinic — Monrovia
- Los Angeles Clinic and Hospital Assn. — Los Angeles
- Hollywood Clinic — Hollywood
- Seaview Clinic — Long Beach
- Radium and Oncologic Institute — Los Angeles
- Marian Davies Foundation — West Los Angeles
- Baptist Christian Center — Los Angeles
- Vienna Health Institute — Los Angeles
- Viscose Ambulatorium — Los Angeles
- Belvedere Clinic — Los Angeles
- Children's Clinic — Los Angeles
- Emergency Clinic — Los Angeles
- Los Angeles Cancer Hospital and Clinic — Los Angeles
- Los Angeles Express Better Baby Clinic — Los Angeles
- Long Beach Telephone Clinic — Long Beach
- Edwin Larson Hospital and Clinic — Los Angeles
- Los Angeles Diagnostic Clinic — Los Angeles
- Los Angeles Tonsil and Adenoid Clinic — Los Angeles
- Mothers' Clinic — Los Angeles
- Moore-White Clinic — Los Angeles
- Medical Clinic — Los Angeles
- MacLean Clinic — Los Angeles
- Manchester Hospital and Clinic — Los Angeles
- Neighborhood Settlement Clinic — Los Angeles
- Pacific Coast Proctological Clinic — Los Angeles
- Pershing Square Clinical Group — Los Angeles
- Dr. A. E. Pike Clinic — Long Beach
- Solar Clinic and Sanatorium — Los Angeles
- Vermont Clinic — Los Angeles
- Vermont Tonsil Clinic — Los Angeles
- Vermont Medical Clinic — Los Angeles
- Women's Clinic and Maternity Service — Los Angeles
- Watts Suburban Clinic — Los Angeles

Private Hospitals With Out-Patient Departments

(This is only a partial list as gathered from questionnaires which were sent out. Complete lists will be printed in later reports.)

Los Angeles County:
- Alhambra Hospital, Inc. — Alhambra
- Good Hope Hospital Association — Los Angeles
- Methodist Hospital — Los Angeles
- San Pedro General Hospital Association — San Pedro
- Eye and Ear Hospital Clinic — Los Angeles
- Long Beach Community and Seaside Hospital — Long Beach
- Tichenor Orthopaedic Clinic — Long Beach
- White Memorial Hospital — Los Angeles
- Barlow Sanatorium Association — Los Angeles

Calaveras County:
- Bret Harte Sanatorium — Murphy

Lassen County:
- Westwood Hospital — Westwood
- Riverside Hospital — Susanville

Mariposa County:
- Yosemite National Park (Government) — Yosemite

San Bernardino County:
- Loma Linda Sanatorium and Hospital — Loma Linda

San Diego County:
- Paradise Valley Sanatorium and Medical Clinic — San Diego
- San Diego Hospital — San Diego

San Francisco County:
- St. Luke's Hospital — San Francisco
- Shriners' Crippled Children's Hospital — San Francisco

Santa Barbara County:
- St. Francis Hospital — Santa Barbara
- Cottage Hospital — Santa Barbara

Santa Clara County:
- Sunnyholme Preventorium — San Jose

Alameda County:
- Fabiola Hospital — Piedmont

Conclusions

I. Legislation is needed:
   (a) To define clinic or dispensary.
   (b) To create a bureau or sub-bureau for the purpose of:
      (1) Standardizing the type of medical practice in these dispensaries or clinics.
      (2) To license clinics.
      (3) To meet the needs of various communities in regard to dispensaries and clinics.

II. Standardization of medical practice in clinics and dispensaries is important, and is the biggest factor in curbing the number of irregular and small clinics.

III. Centralization of clinics is a big factor in the economics of clinical practice, as evidenced by the total cost of San Francisco as compared with Los Angeles, where approximately the same number of visits were made.
   (a) Centralization of health units, such as city, county, and school departments, in large centers of population would cut down materially the total cost.

IV. The administration of clinics should be in the hands of the medical profession, and various other departments should be subsidiary ones.
   (a) Medical social service.
   (b) Medical nursing service.

V. The operation of clinics and dispensaries with free medical care by religious organizations, insurance companies, clubs, fraternal organizations, newspapers, etc., for the sole purpose of furthering their own respective ends, is to be deplored. It is still further to be deplored if volunteer medical service is requested for such institutions.

VI. A survey of the medical facilities of the state should be undertaken by the California State Medical Association with a full-time man and clerical help, in order to get statistics on the vast number of private and irregular clinics and groups, who are preying on the public under the name of clinic, which is a word that has been coined and developed by the medical profession and has become generally recognized as a place where one can get the best of medical care at a nominal cost. It is up to the medical profession to protect its good name and curb the activities of such irregular groups by curbing their use of the word "clinic."

VII. The cost of caring for patients in any clinic depends on the total number of individuals visiting that clinic. There must be a sufficient number to justify the number of the personnel necessary to conduct such a clinic. The small clinic has no business to exist.

STATE MEDICAL ASSOCIATIONS

CALIFORNIA MEDICAL ASSOCIATION*

LYELL C. KINNEY ..... President
JUNIUS B. HARRIS ..... President-Elect
EMMA W. POPE ..... Secretary

COMPONENT COUNTY SOCIETIES

ALAMEDA COUNTY

The Alameda County Medical Association held a joint meeting with the county dental unit at Hunter Hall on May 19 at 8:20 p. m. at which the following scientific program was presented.

A report of a case of varicose veins with large ulcer treated successfully by the injection method by J. H. Scudder. Doctor Beaudoux reported a case of septum deviation with infection of the sphenoid sinuses in a boy twelve years of age, demonstrating the case and showing x-ray plates. He also presented a foreign body removed from the roof of the nasal cavity of a man who had been injured forty years previously, and who had carried the foreign body in the nose for that period. Dr. Don J. Aubertine talked on the essentials of oral diagnosis from a medical and dental standpoint, illustrating his talk with charts, lantern slides, and x-ray films. Dr. Clifford Sweet discussed dental prophylaxis in children and Dr. W. F. Holcomb talked on the history of dentistry and medicine.

The meeting was continued informally at the refreshment table, where members of the two professions had an opportunity to become better acquainted and to exchange views on subjects of common interest.

GERTRUDE MOORE, *Secretary.*

COLUSA-GLENN-YOLO COUNTY

The medical men of Yolo, Colusa, and Glenn counties met at a dinner at Willows Wednesday evening. After dinner a very fine meeting was held at which were discussed pneumonia and the treatment of varicose veins by the injection method. Twenty-six men were present. This was the first meeting of the tri-county society and much good-will and medical information was resultant. The different types of chest conditions were demonstrated with films and the injection of veins was demonstrated on patients present.

T. H. BROWN, *Secretary.*

FRESNO COUNTY

The regular meeting of the Fresno County Medical Society was held in the Hotel Californian June 3.

Doctor Trowbridge reported that the committee of which he is the chairman, appointed to investigate the County Hospital situation in Fresno, was carrying on the investigation and would have a full report to offer at a later meeting.

Dr. C. O. Mitchell, delegate to the meeting of the California Medical Association, reported the meeting of the session of the House of Delegates held April 30 at Del Monte. His report was comprehensive and interesting.

Dr. John H. Graves of San Francisco was the speaker of the evening. He discussed the problems which medical men are facing with regard to the patient with moderate means. He gave a review of social medicine as it is practiced in Germany, Great Britain and other European countries. He discussed the various plans that have been considered recently in this country for coping with the problem of a patient with an income less than $2500. He advised that nothing should be done in regard to this matter by the various societies of the California Medical Association until the final report is made by the national committee. This committee is working on a five-year program, two of which have elapsed, so that the report will not be published for at least three years. Following Doctor Graves' paper there was a general discussion in which Doctors A. E. Anderson, C. O. Mitchell, C. P. Kjaerbye, and J. A. Montgomery took part.

J. M. FRAWLEY, *Secretary.*

ORANGE COUNTY

The regular monthly meeting of the Orange County Medical Society was held in the meeting rooms of the First Methodist Church of Fullerton on Tuesday, June 3, at 6:45 p. m. A very fine dinner was served by the ladies of the church to approximately fifty doctors.

After the dinner the meeting was called to order by President Robertson. The minutes of the last meeting were read and approved. The speakers of the evening were Dr. E. C. Fishbaugh of Los Angeles and Dr. Bessie Stokes Martell of Santa Ana. Doctor Fishbaugh gave a very interesting paper on "The Treatment of Arthritis," stressing the importance of the colon as the etiological factor in a great number of these cases. This was illustrated by lantern slides, showing how improvement takes place very often after conditions of the large bowel are remedied by proper diet, elimination, surgery, and even colonic irrigation. Doctor Martell gave a very practical and interesting paper on "The Relation of Blood Chemistry to Disease." It contained many excellent points, especially for the general practitioner in diagnosis.

The secretary was ordered to investigate the cost of county auto emblems and then circularize the members of the society in an effort to find out what number desired them.

Resolutions on the deaths of Dr. George Austin Shank and George Clyde Ruble were prepared and read by Dr. C. D. Ball, state chairman of the Committee on History and Obituaries. These resolutions were accepted and the secretary was ordered to send a copy of each to the widows and also to the state secretary.

A motion of thanks and appreciation to the ladies of the church for their part in providing the dinner and place of meeting was made and seconded. This was carried unanimously.

HARRY G. HUFFMAN, *Secretary.*

SACRAMENTO COUNTY

The third regular meeting of the Sacramento Society for Medical Improvement for the year 1930 was called to order by the president, Gustave Wilson, at the Senator Hotel, April 15, at 8:30 p. m., forty-four members being present.

* For a complete list of general officers, of standing committees, of section officers, and of executive officers of the component county societies, see index reference on the front cover, under Miscellany.

The minutes of the last meeting were read and approved.

The paper of the evening was given by Dr. Charles E. von Geldern. His subject was "Congenital Malformations and their Etiology." Many varieties of congenital malformations were discussed and interesting drawings of these monstrosities were projected on the screen. Experimental evidence was cited which seemed overwhelmingly to favor the assumption that congenital malformations were the result of an arrest some time during embryonic development; also that the double and single types and other differences which occurred depended entirely on the particular time of the arrest in development.

The paper was discussed and appreciation of it expressed by Doctors Rulison, Johnson, Gundrum, Wilder, and Beach.

The applications for membership of Doctors D. W. Babcock, G. W. Babcock, A. W. McPherson, and E. Sevier were read for the second time and all were unanimously elected to membership in the Sacramento Society for Medical Improvement. The applications for membership of Doctors Beauchamp, W. B. Felger, P. W. Frame, M. Hopkins, B. J. Rea, and J. A. Stabel were read for the first time.

Motion was made and passed that the secretary be instructed to write a letter of congratulation to the secretary of the Dental Association of Sacramento in which offer is made of our help in the forthcoming convention.

Dr. F. F. Gundrum as chairman of the Membership Committee reported the activities of the committee in securing members.

FRANK WARNE LEE, *Secretary.*

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SAN DIEGO COUNTY

On May 13 in the Red Cross building at the Naval Hospital, Dr. Leo Buerger of Los Angeles, who is well known for his research work on the pathology of the vascular system, spoke before the joint meeting of the Naval Hospital staff and the San Diego County Medical Society.

His talk, which was profusely illustrated, dealt with those somewhat puzzling vascular conditions of the extremities tending toward obliteration of the vessels. Doctor Buerger dwelt chiefly upon the clinical symptomatology and pathology of his subject, emphasizing especially the condition he calls thrombo-angiities obliterans.

The lecture was thoroughly enjoyed by a large audience. The meeting adjourned to partake of a tempting buffet lunch served by the hospital staff.

* * *

At the regular meeting of the staff of the La Jolla Hospital Monday, May 18, Dr. H. A. Thompson talked on "The Use and Abuse of the Clinical Laboratory," stressing first the use that should be made of the various fields of laboratory facilities, blood, urine, stools, metabolic, and serological work as adjuncts to the clinical findings. He called attention to cases where the laboratory findings are the means of differential diagnosis. Then Doctor Thompson asked that the laboratory be not abused: "Use it as corroboration; don't ask for a diagnosis from the laboratory; don't ask for emergency work when the case is not an emergency."

After questions and discussions by various members of the staff, Doctor Thompson closed the evening.

* * *

The regular monthly meeting of the Mercy Hospital staff was held on May 20 at 8 p. m. In accordance with the rules and regulations set by the American College of Surgeons, a part of each staff meeting henceforth will be devoted to a review and discussion of deaths occurring in the hospital.

Several interesting cases were discussed by Doctors Wing, Burger, McClendon, Schlappi, and Ryan.

At this meeting a new financial policy was adopted, which includes the establishment of credit for the patient before admission to the hospital. In this way it is hoped that the financial burden of the hospital will be relieved.

MINTON FETTER.

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SAN JOAQUIN COUNTY

The regular meeting of the San Joaquin County Medical Society was held Thursday at 6 p. m., June 5, at the country home of Dr. B. F. Walker, eight miles north of Stockton. The program was preceded by a swim in the private pool and a fine barbacue dinner under the pergola, with music by the Optimist Club Quartet.

The principal paper of the evening was given by Dr. A. C. Reed, professor of tropical medicine at the University of California, on the subject, "A Travelogue Through Asia," illustrated with lantern views.

Doctor Reed stated that he would develop the fact that health and sanitation are governed in the East as they are in the West by superstitions, beliefs and traditions of race and religion. In addition, the ever increasing nationalism in Asia is adding to the problem.

He showed pictures of Cairo to illustrate the method of spreading of such diseases as hookworm and Bilharzia disease, due to the use of water in canals for irrigation, sewers, bathing, washing animals, drinking, and every other purpose. The trematode worms ruined ancient Egypt and have served to keep modern Egypt in subjection. At present the government is combating the diseases with mobile dispensaries, which treat from four to six hundred cases a day, manned by one doctor and a group of native assistants. The treatment consists of intravenous injections of six per cent tartar emetic daily for twelve doses. These men become very skillful and swift in their work. The method of treatment of splenomegaly by removal of the spleen is very successful in Egypt. By taking the precaution to cure the Bilharzia disease first and by being sure that the hemoglobin is forty per cent or better, they have had a fatality of less than four per cent following the operation.

Corn is an abundant crop in Egypt and pellagra a very common disease. One peculiarity due to seasonal condition is that while pellagra is a spring disease here, in Egypt it is most frequent in the fall.

In Palestine, malaria used to be the most prevalent disease, but since the occupation by the British, who brought sanitation and screening of the cisterns in the cities, malaria has almost disappeared.

Doctor Reed spoke of the unsanitary methods of date packing where the fruit is gathered and packed by treading with the feet into boxes and bales, along with dust and dirt of every description.

He brought out vividly by lecture and pictures the most unsanitary conditions in India, where religious pilgrims gather in temple pools and in the Ganges River to bathe, drink the water and put it into their eyes, ears, nose, and mouth. The river and the pools are polluted by promiscuous bathing, by the sewage of the cities and the temples, by the wholly or partially burned corpses of human beings and lower animals and by every form of offal.

The effect of betal-nut chewing, alone or combined with the use of Indian hemp during the great feasts, was demonstrated.

In conclusion, the doctor said the great problem to be met was religious traditions and growing nationalism. He felt we must meet China, accept the best of their culture and induce them to accept the best from our civilization. All of the larger firms of San Francisco have come to recognize that the future of our Oriental business depends upon our personal relations and friendship with China. That will be developed by friendly exchange of scientific information. The international institute is now an integral unit of the University of California to coöperate with the nations of the East.

The application of Dr. E. W. Hill of San Andreas for membership by transfer from the San Benito County Medical Society was read and approved.

The meeting was attended by Doctors A. C. Reed of San Francisco, Fred R. De Lappe of Modesto. Orrin Cook, Edward Beach and Frank Reardon of Sacramento, and Barton Powell Jr., as guests. The members of the society present were: Doctors E. A. Arthur, Barnes, Blackmun, Boehmer, Bolinger, Broaddus, Dameron, Doughty, Dozier, Haight, Hansen, Holliger, Kaplan, McCoskey, McGurk, McNeil, Nelson, O'Donnell, Pinney, D. R. Powell, Sanderson, Sheldon, M. H. Smyth, Hudson Smythe, Thompson, Tretheway, Van Meter, Vischi, Walker, Williamson, and Sutton.

C. A. BROADDUS, *Secretary.*

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SAN MATEO COUNTY

The April meeting of the San Mateo County Medical Society was held April 25 at the Oak Tree Inn, San Mateo, following dinner. About twenty members were present; Doctor Phillips of Santa Cruz, councilor for this district; and the guest speakers, Doctors Gelston and Darling of San Francisco.

Doctor Gelston gave a very interesting talk on the plan adopted by most pediatricians of taking care of infants on a yearly contract basis. He pointed out that in this way more frequent observations can be made and more accurate data can be kept concerning the child's development.

The San Francisco County Milk Commission and the status of various grades of milk were discussed by Doctor Darling. He discussed, also, the diseases spread by milk and the care necessary in preventing epidemics.

Doctor Phillips gave a short talk on the business of the convention at Del Monte in May.

Following a short business session the meeting adjourned.

ERMA B. MACOMBER, *Social Secretary.*

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SANTA BARBARA COUNTY

The regular meeting of the Santa Barbara County Medical Society was held in the St. Francis Hospital Monday evening, June 9, with Doctor Freidell presiding.

Owing to the limited time of the principal speaker, the business session was postponed until after the scientific program.

The president then called upon Coleman Stewart, who gave a short talk on "Ambulance Chasers." This was discussed by Doctors Bakewell, Stevens, Brown, and Atsatt.

Doctor Freidell then introduced Dr. John Graves, chairman of the State Committee on the High Cost of Medical Care, who gave a most interesting and instructive talk on "Medical Economics." He told how conditions were taken care of in Germany, Denmark, and Great Britain, and his conclusion was that none of these methods was applicable to the American people. He then outlined several methods that have been suggested to his committee and left a suggestion that our society have several meetings devoted to this subject and that each member seriously consider some plan whereby an equable arrangement may be made for all. He particularly stressed that these suggestions should come from the medical profession themselves and not from the laity.

The paper was first discussed by Doctor Brown, who gave a glowing tribute to Doctor Graves for his thoughtful study and great amount of work as a member of his committee. Doctor Brown then read a few excerpts from his own paper which had been presented at the state society.

Doctor Graves' paper was further discussed by Doctors Stevens and Ullmann.

Dr. Ikeda of Tokio, Japan, then gave a short talk on the same conditions in Japan.

Following this talk the society went into executive session and Doctors D. H. McNamara, Doris McNamara, and Arthur E. Serns were unanimously elected into membership.

Doctor Bakewell, reporting for the committee on the Bissell Library equipment, stated that it was their conclusion that this library should be furnished by the staff of the Cottage Hospital rather than by the County Medical Society, the reason being that eventually the county society might have a home of its own and the question might arise as to whom this library belonged. It was moved, seconded and carried, that this suggestion be adopted.

A communication was read from the federal legislation for birth control, and it was moved by Doctor Ullmann, seconded and carried, that the communication be tabled.

A communication was then read from the Greater New York Committee on Health Examination. Doctor Bakewell moved, and it was seconded and carried, that hereafter all questions relating to any propaganda be referred to the board of censors.

Doctor Lamb then brought up the ambulance question, stating that it was impossible to get the city ambulance to take other than emergency accident cases to the County Hospital. The subject was discussed and it was moved, seconded and carried, that the president appoint a committee to wait upon the Police Commission and City Council to see if an equable arrangement could be made.

The president then appointed the following committee: Doctors Lamb (chairman), Schurmeir, and Ullmann.

There being no further business the meeting adjourned.

WILLIAM H. EATON, *Secretary.*

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VENTURA COUNTY

The June meeting of the Ventura County Medical Society was held on Tuesday, June 10, at 8 p. m. in the clinic building of the Ventura County Hospital.

Members present were: Doctors W. S. Clark, D. G. Clark, Welch, Achenbach, Little, Armitstead, Broughton, Bianchi, Homer, Shore, and Smolt. Guests were: Doctors Mosher and Rhymes.

It was moved and carried that the summer recess be omitted this year and meetings held during July, August, and September.

The rest of the meeting was devoted to the paper of Dr. Conrad J. Baumgartner of Los Angeles. Doctor Baumgartner's subject was "The Diagnosis and Treatment of Goiter." The paper was illustrated by lantern slides of microscopic pathology and by a reel of motion pictures explaining the anatomy of the normal and diseased thyroid gland.

CHARLES A. SMOLT, *Secretary.*

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YUBA-SUTTER COUNTY

The annual meeting of the Yuba-Sutter County Medical Society was held in the Marysville Hotel. The following officers were elected to serve for one year: President, G. S. Delamere of Marysville; vice-president, Allen Gray of Marysville; secretary-treasurer, F. W. Didier of Wheatland. The board of censors: A. L. Miller, P. B. Hoffman, and N. R. Richardson. A vote of thanks and appreciation was tendered the outgoing officers, namely, E. E. Gray, president, and G. W. Stratton, vice-president.

Following the business meeting a lecture by Dr. Crawford Best of San Francisco was given on "Infant Feeding" which threw much scientific light on this very essential subject.

The meeting adjourned with luncheon.

F. W. DIDIER, *Secretary.*

OBITUARY

Robert Pollock, M. D.
1866-1930

Robert Pollock

Dr. Robert Pollock of San Diego died suddenly June 2. While not unexpected by those who were closest to him, his going is a shock. Coming to San Diego from Cleveland, Ohio, nineteen years ago to rest, he soon began to chafe under the enforced idleness, joined the medical society February 6, 1913, and started in again to labor in his chosen field, that of internal medicine. He battled his way back to comparative health, which lasted until recently. Few of the newer members of the medical society knew the part he played in bringing medicine to its present position in San Diego, if not in California. As delegate to the state and national organizations he added his counsel and experience to their deliberations. For years he served on the governing board of the Southern California Medical Association. But the pride of his heart was the medical library. He was one of the faithful few who started that organization years ago and "followed through" until it has reached its present standing as one of the best. In fact, it was his unwavering determination in the face of lack of interest and of lethargy that brought the library into being. It was only through his untiring and continued expenditure of self and material aid that kept it going during the early days of growth under the most untoward circumstances. Only those who labored with him know his vital contribution to the cause. The library is his monument.

But not only was Doctor Pollock an ardent worker for organized medicine; he was a close friend in times of struggle to many an individual practitioner. No one ever heard him utter an unkind comment regarding another physician. His going is a loss to all, both the group and the individual. His nineteen years of labor have made a place that cannot be filled. As time goes on the gap will close, but we will wait long for another who will give of himself so whole-heartedly to the cause of medicine.

CHANGES IN MEMBERSHIP

New Members

Alameda County—Geoffrey H. Baxter, Garry Richman Burke, George Fairchild Calvin, Claude G. Furbush, Gerald Harry Gray, Lawrence R. Jacobus, Nelson Sherman Keeler, Jefferson Larkey, William Atkinson Sadlier Magrath, George Elwood Nesche, William Walter Reich, Ralph Waldo Sanders, Alfred Adolph Siebert, Ralph S. Walker, Frances E. Wilson.

Butte County—Raymond Kilduff.

Imperial County—Frederick C. Gregg.

Kern County—Frederick John Miller.

Los Angeles County—H. Cedric Alward, Alexander Clement Cameron, Franklin Morton Dryden, Maxwell Fields, Philip I. Hoke, Warren Ellis Hunter, Erle Edward Langdon, Curt E. Leuschner, A. Lovas, Benjamin Naidis, Nina R. Smith, Mark T. Steele, Edwin B. Tuteur.

Orange County—Ralph C. Warne.

Riverside County—George Cable Holleran.

Sacramento County—Daniel W. Babcock, Jean Wells Babcock, Harry H. Beauchamp, Alfred W. MacPherson, Bernard J. Rea, Johann Alois Stabel.

San Bernardino County—Louisa H. Bacon, James Jay Cecil, Delbert B. Williams.

San Francisco County—Herman Feinberg, Joseph L. McCool, Dorothy Lucile Morse, Gerald B. O'Connor.

San Joaquin County—Thomas L. Sutton.

Santa Barbara County—Leonard J. Brunie, Yolande Sutherland Brunie, Delbert N. McNamara, Doris Lena E. McNamara, Arthur Eugene Serns, Charles S. Warwick.

Yuba-Sutter County—N. E. Richardson.

Resignations

Charles C. Fulmer, from San Francisco County.
James M. Smithwick, from Alameda County.
Wesley J. Woolston, from Los Angeles County.

Transferred Members

Earl W. Hill, from San Benito to San Joaquin County.

Deaths

Dunham, Ora Baxter. Died April 21, 1930, age 51 years. Graduate of University of Illinois College of Medicine, Chicago, 1900. Licensed in California, 1904. Doctor Dunham was a member of the Imperial County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Gardner, Samuel J. Died at San Francisco, June 7, 1930, age 58 years. Graduate of the University of California Medical School, San Francisco, 1899. Licensed in California, 1899. Doctor Gardner was a member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Hickox, Arthur Swain. Died at Oakland, June 3, 1930, age 69 years. Graduate of California Eclectic Medical College, Los Angeles, 1906. Licensed in California, 1911. Doctor Hickox was a member of the Alameda County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

MacLeish, Archibald Lyle. Died at Los Angeles, May 21, 1930, age 76 years. Graduate of University of Edinburgh Faculty of Medicine, Edinburgh, 1881. Licensed in California, 1894. Doctor MacLeish was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

Nahl, Constante Alexander. Died at Sacramento, June 8, 1930, age 52 years. Graduate of Cooper Medical College, San Francisco, 1902. Licensed in California, 1902. Doctor Nahl was a member of the Sacramento Society for Medical Improvement, the California Medical Association, and a Fellow of the American Medical Association.

Ring, Hogan J. Died April 26, 1930, age 79 years. Graduate of Bennett Medical College, Chicago, 1877. Licensed in California, 1888. Doctor Ring was a member of the Humboldt County Medical Society, the California Medical Association, and the American Medical Association.

Ruble, George Clyde. Died at Los Angeles, June 3, 1930, age 32 years. Graduate of University of Oklahoma School of Medicine, Oklahoma City, 1922. Licensed in California, 1927. Doctor Ruble was a member of Orange County Medical Society, the California Medical Association, and the American Medical Association.

Ryan, Louis X. Died at Lake County, May 21, 1930. Graduate of University of California School of Medicine, San Francisco, 1905. Licensed in California, 1905. Doctor Ryan was a member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Schooling, H. Guy. Died at Los Angeles, March 6, 1930, age 58 years. Graduate of Lincoln Medical College, 1901. Licensed in California, 1921. Doctor Schooling was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

Shank, George Austin. Died at Santa Ana, May 20, 1930, age 68 years. Graduate of Kentucky School of Medicine, Louisville, 1898. Licensed in California, 1898. Doctor Shank was a member of Orange County Medical Society, the California Medical Association, and the American Medical Association.

Threadgill, Jesse Mercer. Died at Hollywood, June 11, 1930, age 57 years. Graduate of Missouri College of Medicine and Science, St. Louis, 1898. Licensed in California, 1922. Doctor Threadgill was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

NEVADA STATE MEDICAL ASSOCIATION

W. A. SHAW.....President
R. P. ROANTREE, Elko.....President-Elect
H. W. SAWYER, Fallon.....First Vice-President
E. E. HAMER, Carson City.....Second Vice-President
HORACE J. BROWN.....Secretary-Treasurer
R. P. ROANTREE, D. A. TURNER,
S. K. MORRISON.....Trustees

COMPONENT COUNTY SOCIETIES

WASHOE COUNTY

The regular meeting of the Washoe County Medical Society was held in the County Library hall on the evening of June 10, Doctor Hamer, president, presiding.

The only case report of the evening was that presented by Dr. E. E. Hamer, secretary of the Nevada State Board of Health. This was of unusual interest, being the first medically reported case of legal execution by hydrocyanic gas reported in the world's history. The report was as follows:

"Report of the execution of Robert H. White by hydrocyanic acid gas on June 2, 1930, at Nevada State Prison:

"A study of the heart and respiratory action was made at the time of the execution, a Bowles' stethoscope being applied on the bare chest wall over the apex of the heart. The tube leading to the ear pieces on the outside of the prison wall was connected to the stethoscope while the prisoner was being strapped to the chair.

"This was at 4:36 a. m. Heart action at that time was 108, strong and regular. The gas was started generating at 4:37½. At 4:38 the pulse rate was 120, regular and strong. A small inspiration was taken at 4:37¾, at which time the prisoner indicated that he smelled the gas. At 4:38 he took a very deep inspiration, turning his head toward the gas. He gave a spasmodic cough and his head fell forward and he became unconscious. Following this first deep inspiration there was a complete stopping of the heart action for fifteen seconds. After that short period of time or at 4:38½, the heart again began to beat in an irregular manner which continued for fifteen seconds and then became regular and strong. There was no apparent loss of power of the heart action. After this time, for two minutes the heart became slower, beating one hundred times per minute at 4:41½, and eighty times per minute at 4:44. At 4:46½ the heartbeats were distinctly regular, but becoming very weak. The last heart-beat was noted at 4:47.

"Respirations during the time after the first deep inspiration were convulsive and irregular.

"There is no doubt that the prisoner was unconscious after the first deep inspiration. His head was thrown backward and remained in that position after the fifth or sixth inspiration or for two minutes, when it fell forward and there was no further movement of the head.'"

* * *

Dr. DaCosta presented the following resolutions on the death of Dr. Alex McIntyre, who died at his home in Reno of chronic myocarditis on May 24.

The secretary was ordered to forward copy of the same to the widow and daughter and incorporate copy of same in the minutes.

IN MEMORIAM—ALEX MCINTYRE, M. D.

Whereas, Almighty God in his infinite wisdom has seen fit to remove from our midst our beloved confrère Dr. Alexander McIntyre; and

Whereas, For many years we have known Doctor McIntyre as a competent, conscientious and ethical member of our profession, and as a true friend and an upright citizen with whom it has been, at all times, a very great pleasure to associate; now be it therefore

Resolved, That we extend our sincere sympathy to his loved ones in this their hour of darkness and sorrow, and it is our hope that He who doeth all things well will assuage their grief and through His

promise of a happy reunion on that great day, will lead them again through the path of sunshine and contentment; and be it further

Resolved, That this resolution be spread upon our minutes and that a copy therefore be sent to the bereaved family.

* * *

Next followed a resolution by Dr. J. L. Robinson on the subject of a Washoe County Community Hospital. The resolutions were accepted and endorsed by unanimous vote.

Upon motion of the secretary, and seconded, it was moved that the president appoint a hospital committee. The chair appointed Doctors J. L. Robinson, A. R. DaCosta, and W. L. Samuels as that committee.

"Surgical Treatment of Peptic Ulcers," a sixteen-millimeter cinema, kindly loaned us by the Davis and Geck suture people of Brooklyn, New York, was next shown. The society was very much pleased with this exhibition and tendered its thanks by personal letter to the Davis and Geck people. The society also expressed its appreciation to Doctor Morrison for bringing his machine and taking charge of the films.

There being no further business the society stood adjourned.

THOMAS W. BATH, *Secretary.*

UTAH STATE MEDICAL ASSOCIATION

H. P. KIRTLEY, Salt Lake City.....President
WILLIAM L. RICH, Salt Lake City.....President-Elect
M. M. CRITCHLOW, Salt Lake City.....Secretary
J. U. GIESY, 701 Medical Arts Building, Salt Lake City.....Associate Editor for Utah

OFFICIAL NOTICE

Notice of all members is called to the dates set for the 1930 meeting of the Utah State Medical Association to be held in Salt Lake City, September 9, 10, and 11.

The program, while not completed to a point where it can be definitely announced, will include President Morgan of the American Medical Association, Leo Eloesser of San Francisco, and Doctors Worthin, Ivy and Muhl.

Dates for the postgraduate classes of instruction have not as yet been decided, but will be announced next month.

COMPONENT COUNTY SOCIETIES

SALT LAKE COUNTY

A dinner meeting of the Salt Lake County Medical Society was held at the Newhouse Hotel on Monday evening, May 12.

The meeting was called to order at 8:30 o'clock by President M. M. Nielson, who introduced the speaker of the evening, Dr. Russell Lee of San Francisco.

Doctor Lee read a paper on "Poliomyelitis." This paper was discussed by M. M. Nielson, T. B. Beatty, Ralph Pendleton, and G. G. Richards. Dr. W. Shephard of San Francisco spoke for a few minutes about the program of the convention of the Western Division of the State Health Officers, which is to be held at the Utah Hotel, Salt Lake City, June 12, 13, and 14.

The meeting was adjourned at 9:50 o'clock. Forty-eight members and five visitors were present.

BARNET E. BONAR, *Secretary.*

UTAH COUNTY

The last meeting of the Utah County Medical Society was held at the Hotel Roberts on May 28. Dinner, as usual, preceded the scientific program.

The latter consisted of a talk by Dr. Laurence Snow of Salt Lake City on "Back Pain," following which two moving pictures were also shown. One of these was "Peptic Ulcer and Its Surgical Treatment," and the other "The Relation of Absorbable Sutures to Wound Healing."

Eighteen members were present. No business was taken up. This was the final meeting of the society until next October.

J. L. AIRD, *Secretary.*

WEBER COUNTY

At the regular meeting of the Weber County Medical Society held in the Hotel Bigelow on May 22, Dr. H. B. Daines of Ogden and Dr. G. D. Rutledge of Kaysville were accepted to membership in the county society.

Dr. F. Goeltz of the Salt Lake County Medical Society was guest speaker of the evening. His subject was "Early Diagnosis of Tuberculosis of the Kidneys."

Dr. Clark Rich has just returned from a few months' postgraduate study in European clinics.

CONRAD H. JENSON, *Secretary.*

UTAH NEWS

The first meeting of the Western Branch of the American Public Health Association was held in the Utah Hotel, June 12 to 14 inclusive.

The meeting was characterized by a series of luncheons and scientific sessions, with a public meeting on the nights of June 12 and 13.

High points of interest were a symposium on Rocky Mountain fever, one on the control of parasites, and one on meningitis, covering its epidemiology, bacteriology and serology, recent outbreaks, and intermountain incidence. Tuberculosis was also discussed in the light of recent progress, and undulant fever was touched upon. At the Thursday night public meeting, Dr. H. P. Kirtley, president of the Utah State Medical Association, addressed the meeting on "Utah's Public Health," and at the Friday night meeting, Dr. Langley Porter of the Medical School of the University of California spoke on "Keeping the Family Well."

Other topics touched upon at the Saturday session were included in a symposium on sanitation, the advance of health education, the development of public health nursing in the West, and preventive dentistry.

The annual dinner at Saltair and the installation of newly elected officers closed the session Saturday night.

A Consulting Service for Epidemic Meningitis.—A consulting diagnostic service for epidemic meningitis under the auspices of the Department of Public Health and comparable with that now offered for poliomyelitis by the Harvard Infantile Paralysis Commission marks a forward step in communicable disease control. Upon request of the attending physician, a representative of the department will see a case of suspected meningitis with him, and if so desired will be ready to confirm the diagnosis by laboratory methods at the bedside.

Every communicable disease presents special problems which must be met in attempting control. For diphtheria the state now offers free diagnostic laboratory service; this same service for meningitis must be available at the bedside. Attempts to check the spread of the disease have been notoriously discouraging, but early diagnosis and treatment have materially contributed to a lowered fatality. It is hoped that through the proposed service diagnostic facilities comparable to those found in large hospitals may be made readily available to every physician within the state.

While the meningitis situation in Massachusetts is not alarming, the increasing prevalence throughout the country should prompt every practitioner to watch for the disease. The establishment of a meningitis service is a valuable precaution against a future emergency. Its success will depend upon the reception accorded it by the profession.—*The New England Journal of Medicine*, March 13, 1930.

MISCELLANY

Items for the News column must be furnished by the twentieth of the preceding month. Under this department are grouped: News; Medical Economics; Correspondence; Department of Public Health; California Board of Medical Examiners; and Twenty-Five Years Ago. For Book Reviews, see index on the front cover, under Miscellany.

NEWS

Luncheon Meeting of California District Hospital Social Workers.—At the California Conference of Social Workers held in Santa Barbara, the California District of American Association of Hospital Social Workers gave a luncheon on May 16, at which sixty-five social workers were present. The luncheon was presided over by Miss Evelyn Z. Phelps of the American Red Cross and president of the organization.

Dr. Edward I. Glaser, a member of the advisory board, spoke of what he thought should be the aims of the organization. Dr. Guy Milberry, dean of the University of California Dental College, spoke on social service work in the Hawaiian Islands.

The luncheon was followed by round-table talks, at which the subjects discussed were: "Objectives in Medical Social Case Work" by Eleanor Barnes of San Francisco; also a paper on "Medical Social Workers' Relationship to Community Agencies" by Miss Z. Buben of Los Angeles.

American College of Surgeons.—The twentieth annual clinical congress of the American College of Surgeons will be held in Philadelphia, October 13-17. The plans for this year's congress include attractive programs for a series of five evening meetings, beginning with the presidential meeting on Monday evening at which the president-elect, Dr. C. Jeff Miller of New Orleans, will be inaugurated. The Murphy oration in surgery will be another feature of that evening's session. For the scientific sessions on Tuesday, Wednesday, and Thursday evenings there will be orations and papers by eminent surgeons of the United States and Canada and distinguished visitors from abroad, dealing with various surgical subjects of present-day importance. The annual convocation of the college will be held on Friday evening.

Annual Meeting of Hospital Social Workers.—Three hundred members of the American Association of Hospital Social Workers met in Boston for the largest annual meeting ever held. The meeting next year will be in Minneapolis, Minnesota.

The following officers were elected: President, Edith M. Baker, Washington University Dispensary and Allied Hospitals, St. Louis, Missouri; first vice-president, Ruth Emerson, University of Chicago Clinics, Chicago, Illinois; second vice-president, Ruth Wadman, American Red Cross, Washington, D. C.; third vice-president, E. Louise Adams, St. Luke's Hospital, New York, New York; secretary, Edith J. McComb, St. Christopher's Hospital, Philadelphia. Pennsylvania; treasurer, Marie Lurie, Jewish Tuberculosis Service, Chicago, Illinois; executive committee, Mary A. Burke, Montreal General Hospital, Montreal, Canada; and Marguerite Spiers, Berkeley Health Center, Berkeley, California.

Perhaps the outstanding gathering of the meeting was the dinner held in coöperation with the Massachusetts General Hospital in celebration of the twenty-fifth anniversary of the establishment of the Social Service Department in that institution. Dr. Richard Cabot and Mrs. John Glenn were the speakers of the evening.

The John Phillips Memorial Prize.—The American College of Physicians announces the John Phillips Memorial Prize of $1500, to be awarded for the most meritorious contribution in internal medicine and sciences contributing thereto, under the following conditions:

1. The contribution must be submitted in the form of a thesis or dissertation based upon published or unpublished original work.

2. It must be mailed to the executive secretary of the American College of Physicians on or before August 31, 1930.

3. The thesis or dissertation must be in the English language, in triplicate, in typewritten or printed form, and the work upon which it is based must have been done in whole or in part in the United States or Canada.

4. The recipient of the prize would be expected to read the essay at the next annual meeting of the college, after which he would be officially presented with the prize by the president.

5. The college reserves the right to make no award of the prize if a sufficient meritorious piece of work has not been received.

6. The announcement of the prize winner will be made not later than two months before the annual meeting.

American College of Physicians, E. R. Loveland, Executive Secretary, 133-135 South Thirty-sixth Street, Philadelphia, Pennsylvania.—*Illinois Medical Journal*, June 1930.

CORRESPONDENCE

Subject of Following Letter: What Not to Do in Gastric Ulcer

To the Editors of California and Western Medicine:

It is astounding to note at times the way in which physicians reach a diagnosis of peptic ulcer and how they propose to treat it. A common story frequently heard is that the patient consulted his neighborhood doctor because of a more or less persistent indigestion. The doctor, without any careful and painstaking analysis of the patient's symptoms, without a complete physical examination and occasionally without any at all, without the slightest attempt to determine the stomach's secretion and motility by a test-meal, sends him at once for an "x-ray picture." If the x-ray report comes back "ulcer," that seems to settle the matter for the average practitioner and he never questions this dictum. Then he tells the patient there are but two courses open; either immediate operation or else rest in bed for at least two weeks, on a very limited diet. The result of this latter plan is loss of time, weight and courage, but only too often no loss of symptoms.

I wish to protest that the x-ray technician, valuable as his services are, has no right to diagnose ulcer without correlation of his findings with all the other clinical evidence available; and that by doing so he encourages lazy members of the medical profession to accept this short cut to diagnosis without giving the patient the benefit of other methods of investigation. Furthermore, I protest that when ulcer is present surgical treatment should be the last resort, after all other plans of management have failed; and even then it should be recognized that surgical treatment of ulcer is not infallible by any means, and that the last state of a patient after operation may be even worse than the first. Finally, every uncomplicated

case of ulcer has the right to ambulatory treatment at the outset, by proper diet and by alkaline medication, without loss of time from work and without loss of weight and efficiency; with the understanding that most of them on such a plan get rid of their symptoms and do as well as after more energetic measures.

These conclusions are the result of a good many years of personal experience, are generally accepted as correct by those who have the most experience; and are only repeated now because there seems to be so many who are not yet familiar with them.

WILLIAM FITCH CHENEY.
Shreve Building, San Francisco.

TWENTY-FIVE YEARS AGO *

EXCERPTS FROM OUR STATE MEDICAL JOURNAL

Vol. III, No. 7, July 1905

From some editorial notes:

State Journals.—With July, two new state society journals will make their appearance; the medical associations of Ohio and Texas have recently so voted. We shall be very glad to welcome these journals when they appear, and we certainly extend to them every good wish for long, successful and upright lives. . . .

The Rules of the Council.—By a curious coincidence, two items were received in the office of the journal within the hour. One was a copy of the *Journal A. M. A.* for June 3, and the other was a box containing what appears to be several original packages of a medicinal preparation known as sal hepatica. . . . The journal mentioned contains the advertisement of sal hepatica, in which it is recommended for the treatment of typhoid fever, etc.; so it evidently is regarded as a medicine. The nearest approach to a formula is, "Sal hepatica is composed of the chemically pure salts which analysis has shown to be present in the most celebrated purgative, 'Bitter Waters,' of Europe." The names or the quantities of these salts are matters left to the imagination. . . .

From an article on "The Use of Hyoscin Hydrobromate in the Treatment of the Morphin Habit, With Report of Cases" by R. E. Bering, M. D., Tulare.

When we read the various textbooks on the treatment of the morphin habit, written by some of the ablest men in the country, and endeavor to carry out the plan of treatment suggested, it is no wonder so few physicians in general practice ever undertake to free their unfortunate patients from this dreaded curse, with all its accompanying nervous manifestations, collapse, oftentimes death, and suffering that no words can describe. . . .

From an article on "Uncinariasis in California, Based on Observation of Sixty-Two Cases" by Herbert Gunn, M. D., San Francisco.

The reasons which prompted the writer to investigate the subject under consideration were that during the year 1904 he encountered, comparatively speaking, a somewhat unusual number of cases of uncinariasis, in the ordinary course of practice and in his service in Doctor Hirschfelder's wards of the City and County Hospital of San Francisco, and that he became aware of the fact that quite a number of Porto Ricans were located in this state. The belief that the disease was being overlooked, and that a somewhat extensive importation had occurred, was found upon investigation to be justified.

Only two years ago it was stated that only thirty-eight cases of uncinariasis had been reported in the United States. Since that date many cases have been found to be endemic in many of the southern states, as far west as Texas. . . .

From an article on "A Case of Human Glanders" by William Fitch Cheney, M. D., San Francisco.

. . . I have tried to secure some statistics as to the incidence of human glanders in California, but can find none. The secretary of the State Board of Health, in reply to my inquiry, writes me that the board has no statistics on the subject, and there seems to be no way to discover in how many instances human glanders has been assigned as a cause of death in the state. . . .

From medical society reports:

Monterey County.—To His Excellency, George C. Pardee: At a regular meeting of the Monterey County Medical Society, held at Monterey on April 1, 1905, the following was unanimously adopted:

Whereas, The medical profession is honored by having one of our esteemed members the Governor of our fair state; and

Whereas, He has safely piloted the California ship of state with flying colors through two legislative tempests—his course being marked patriotism, sound judgment and loyalty to his beloved profession; and

Whereas, His recent act in vetoing the vicious anti-vaccination bill, and his unanswerable logic in defense of that action, shows us that he is "not only George C. Pardee, but Doctor Pardee, a physician of integrity"; be it

Resolved, By the Monterey County Medical Society that we heartily commend the action of Governor George C. Pardee in thus guarding the health, wealth and reputation of our state; and be it further

Resolved, That we consider that the further and continued service of Doctor Pardee in the gubernatorial chair will safeguard the best interests of both our state and profession, and to that end we give him or best wishes; and be it further

Resolved, That our secretary be hereby instructed to send a copy of these resolutions to Governor Pardee, to the *California State Journal of Medicine,* and the local press, and that a copy be placed upon our books.

D. BRUMWELL, *Secretary.*

* This column strives to mirror the work and aims of colleagues who bore the brunt of state society work some twenty-five years ago. It is hoped that such presentation will be of interest to both old and recent members.

DEPARTMENT OF PUBLIC HEALTH

By W. M. DICKIE, *Director*

Many Adults Anxiously Seek Birth Certificates.—With the great stimulus that has been given to travel in foreign countries, the Bureau of Vital Statistics of the State Department of Public Health has experienced a great rush in the demand for certified copies of certificates of birth. These are desired by individuals who wish to secure passports and who desire to secure certified copies of their birth certificates as evidence of their citizenship to facilitate the securing of such passports.

Individuals who were born in California since July of 1905, when the state registration of vital statistics began, have little or no trouble in securing copies of their birth certificates, but individuals who were born before that time are experiencing great difficulty in securing evidence of birth. Many such individuals have just come to a full realization of the importance of the birth certificate as a legal document, and many of them have petitioned the superior court of the county in which they were born to establish fact of birth. This is an expensive procedure for most people and it emphasizes again the importance of securing the registration at time of birth of every birth that may occur.

Among the important proofs which are supplied by the evidence presented in birth certificates are proofs of age, citizenship, inheritance rights, and lineage.

Legal evidence regarding age is required in many places for the purpose of gaining entrance to school, securing the right to employment, to vote, to drive an automobile, to marry, and to enlist in military service. Birth certificates are also of value in connection with jury duty, in criminal procedure, in the establishment of legal dependency, and other legal and social uses. Proof of citizenship is especially valuable with relation to the ownership of property, the right to hold certain offices, to enter civil service, to gain admission to certain professions, to secure exemption from military service in foreign countries, and to collect compensation from the government. Birth certificates are used constantly to secure war compensation, to prove claims of widows and orphans, to secure state aid and other charities, to collect pensions, and to prove other matters where it is necessary to establish parentage. There are very few activities, in fact, where the birth certificate may not be used to great advantage by any individual, and in many cases it is an essential requirement.

With the added complications that come into the expanding social system the birth certificate takes on an added significance. It is probable, in fact, that the time is not far distant when every individual will find it necessary to carry a copy of his birth certificate with him at all times. Many individuals, in fact, now carry small photographic copies of their birth certificates with them, at all times, along with their license to operate a motor vehicle, club membership cards and similar identifications. It may not be long before this custom becomes universal in its application.

Imperial Organizes Full-Time County Health Unit. The board of supervisors of Imperial County have organized the health department of that county upon a full-time basis. They have provided an annual budget of more than $15,000 and have appointed Dr. Warren Fox, formerly city health officer of Pasadena and more recently connected with the Los Angeles County Health Department, as health officer of Imperial County. Doctor Fox will have adequate assistance in public health nurses, dairy and milk inspector, sanitary inspector and laboratory technician, in addition to office and clerical help. The United States Public Health Service will be responsible for a small portion of the annual budget, but most of the funds are provided by the county board of supervisors. Imperial is the fourteenth California county to organize upon a full-time basis.

Public Health Courses at Michigan.—The Division of Hygiene, Public Health and Physical Education of the University of Michigan at Ann Arbor has announced courses in public health to be given during the coming summer session of the university, June 30 to August 8. The courses offered cover many phases of public health administration, including child hygiene, public health nursing, nutrition, vital statistics, epidemiology, industrial hygiene, and many other related subjects. Dr. John Sundwall is the director of the Department of Hygiene and Public Health at Michigan.

Status of Epidemic Poliomyelitis.—There have been eighty-six cases of acute anterior poliomyelitis reported in California since the first of the year.

Since many cases are not recognized as acute anterior poliomyelitis, it is important that all cases which may be at all symptomatic of this disease be recognized and placed under control without delay.

It has been observed that in those years when poliomyelitis becomes unusually prevalent in the late spring and early summer, there is nearly always an extensive and disastrous outbreak of the disease in the late summer and early fall, when under normal conditions, the disease is seasonally more prevalent. The prompt institution of control measures at the present time, therefore, is of the utmost importance in order that the chances for a widespread epidemic during the coming fall may be minimized.

CALIFORNIA BOARD OF MEDICAL EXAMINERS

By C. B. PINKHAM, M. D.
Secretary of the Board

News Items, July 1930

Dr. J. B. Harris, recently elected president-elect of the California Medical Society, was the honored guest at a meeting of the Sutter Club members last night (Sacramento ***Bee***, May 17, 1930).

The Federal Radio Commission refused today to renew the license of station KFKB, Milford, Kansas, which has broadcast a medical question box conducted by Dr. John R. Brinkley. The Kansas State Medical Association stated Brinkley was broadcasting objectionable matter (San Francisco ***Examiner***, June 14, 1930).

R. H. Albrextondare (whose real name is said to be A. Hunhas) was reported to have been found guilty of a petty theft charge in the city of Los Angeles recently and sentenced to serve six months in the city jail. (Previous entries, June 1925; March 1926; February and December 1927.)

According to reports, Clayton C. Allen, unlicensed, was arrested in Los Angeles, January 30, 1930, for violation of the State Poison Law, and it is reported that there was found under a cupboard drawer in his bathroom a one-ounce can of morphin, two empty morphin cans, one hypodermic outfit, and one bindle of morphin.

Trial judges granting suspended sentences to those found guilty of a criminal offense without first referring the case to a probation officer, are acting in violation of the law as amended in 1929, is the conclusion reached from an opinion submitted by Attorney-General U. S. Webb . . . (Los Angeles ***News***, May 21, 1930).

Sixty days each in the county jail was the sentence imposed upon Dr. Roy Ankenbrand, twenty-five, chiropractor, and Wilfred E. Collantz, thirty-two, for theft of money from perfume-vending machines (Los Angeles ***Illustrated Daily News***, June 9, 1930).

Accused of having bilked hundreds of people in the bay region out of several thousand dollars on the representation that he was a member of the staff of the famous Mayo Brothers Institute of Rochester, Minnesota, a man giving the name of "Dr. Donald C. Balfour is today at the city prison charged with violating the State Medical Practice Act. He was arrested today by Inspector J. W. Davidson, State Board of Medical Examiners, and Lieutenant of Police James Milloy. Balfour admitted he had treated many people and had collected $10 from each of them for his efforts (San Francisco ***News***, May 13, 1930). According to the San Francisco ***Examiner*** of May 14, he paid a fine of $100 for practicing medicine without a license and is quoted in the San Francisco ***Call-Bulletin*** of May 13 as stating, "I merely laid a hypodermic needle on the arms of my patients . . . and then while they looked the other way, I pinched them. They all claimed I cured them when other doctors failed." Barnum was right.

Shoulders back, chin up, his gray pompadour stretching upward to a point five feet four inches from the floor, Bernard Bernard, Sausalito physical culture director, today heard himself fined $1000 by Federal Judge A. F. St. Sure for teaching people how to grow tall. A small fine was assessed against Louise Glover, five feet eleven inches. The two, according to postal authorities, used the mails to broadcast an offer to make anybody taller for $8.75. Their income, inspectors said, ran around $40,000 a year (San Francisco ***News***, April 30, 1930).

Charged with second degree murder as the result of the death of Miss Jeannette Louis, 18-year-old Chinese girl, following an operation, S. Kayegama and Mrs. S. Ewa (Eda—licensed midwife) will face trial in Superior Court. The order holding them to answer was entered today by Police Judge J. C. Creighton. (Press dispatch dated Fresno, June 14, printed in the San Francisco *Examiner,* June 15, 1930.)

Eyesight racketeers, under a heavy fire of publicity in California, are still operating, Dr. Charles B. Pinkham, secretary of the State Board of Medical Examiners, said to day. . . . A pair posing as the "world-famous Dr. Miles of Chicago and his assistant" performed a bogus cataract operation on the eyes of an elderly woman near Fresno, netting $2250 (San Francisco *News,* May 28, 1930). Miss A. C. Wellensick of Covina, California, recently reported delivering $2300 to a pair of eyesight swindlers. William Sachau of Turlock recently delivered $1000 in cash to a pair of these fakers, one of whom posed as the famous Doctor Peers of Detroit, following the time-worn scheme of alleged radium water in the eye and immediately removing a film which was exhibited to the victim as the cataract already dissolved. Mr. Sachau has identified from the pictures appearing in the pamphlet entitled "Eye Sight Swindlers" (published by the secretary of the Board of Medical Examiners) Roy L. Martin and Elliott Wilkinson as the individuals who mulcted him out of his hard-earned cash.

A. B. Gersabeck, also known as Alfred Bach, was adjudged guilty in the Justice Court of San Diego on June 4, 1930, and the following day was reported to have been sentenced to pay a fine of $600 or serve 180 days in the county jail. "He was committed to jail in default of the payment of fine." According to reports, Bach's "racket" consists in inserting an advertisement for a nurse to take charge of a sanitarium which he proposes to open, and he is reported as having borrowed money from prospects to whom he promises a lucrative salary. It is reported when he appeared in court a half-hour prior to the time set for trial and saw the array of his victims waiting to testify, he suddenly became too ill to appear in court and attempted to get a statement from a physician which would warrant continuance of his case. (Prior entries, August and September 1926; July 1927; September 1928.)

Between six thousand and seven thousand narcotic prescriptions were written by Dr. C. M. Graham, Inglewood physician, in the last eighteen months, according to charges of federal officers today following the physician's arrest in his offices. Doctor Graham asserted he had given the prescriptions only to relieve pain, but the officers declared his records showed at least one case where a narcotic prescription was issued to the same person every other day for many months. They were written in the name of Ben Franklin Jacobs, who is said by the officer to be serving a six months' term in the San Diego jail for drug addiction . . . (Los Angeles *Express,* May 15, 1930).

According to report, Walter Winston Hopson, colored physician of Los Angeles, was arrested by the city and state narcotic squads on a charge of violation of the State Poison Law. He is alleged to have entered into an agreement with Benjamin C. Colly, a druggist, that Colly was to fill narcotic prescriptions by giving to the patient the narcotic contents of prescriptions only. Colly in a signed statement to the police alleges that Hopson told him to do this.

Dr. Eben Jones, 41-year-old chiropractor, held for trial in Superior Court for the death of Mrs. Rose Marshall of 5512 Willow Crest Drive, following an alleged illegal operation, was released today by Municipal Judge Louis Russell on $10,000 bail . . . (Los Angeles *Herald,* May 28, 1930).

With "Dr." Orlando E. Miller, erstwhile psychologist, still a fugitive from justice as the alleged ringleader, Fred G. Collett, his colleague, is due for a second trial on mail fraud charges on May 17. "Dr." Miller was President and Collect vice-president of the Rellimeo Film Syndicate, organized for the production of motion pictures, but was only a stock promotion scheme, the Government charges. Misrepresentations by mail were used to induce many persons to invest thousands of dollars in stock of the now defunct syndicate, it is alleged . . . (San Francisco *Call-Bulletin,* May 10, 1930). (Previous entries, June, October, and November 1926; March 1927; March 1928; December 1929.)

According to reports of our Investigation Department, E. R. Morris, formerly radio announcer for KMIC at Inglewood, was recently arrested on a charge of violation of the Medical Practice Act, it being alleged that he, in association with Prince Charles Stuart, was introduced to prospective patients as "Dr. Morris" and charged $15 per bottle for medicine.

Bernard Bernard, physical culturist of Sausalito, and his secretary, Miss Louise Glover, pleaded guilty yesterday to charges of using the mails to defraud. United States District Judge A. F. St. Sure imposed $1000 fines. Bernard is five feet four inches tall. He has an apparatus and a course of instruction which he claims, in his circulars sent through the mail, would make short people tall. His yearly income was said to be $40,000 from the sale of this apparatus. The government declared that it is impossible to increase the height of adults, and Bernard and his secretary were indicted each on five counts (San Francisco *Examiner,* May 1, 1930).

The writ of prohibition brought by Dr. Francis J. Bold against the Board of Medical Examiners to stop the hearing of charges before that board, based upon an alleged illegal operation, was dissolved by Superior Judge Ruben S. Schmidt of Los Angeles April 23, 1930, and the hearing is scheduled for the coming July meeting.

With an assortment of moonstones, charms, a rosary, curious nostrums and patent medicines in his possession, M. C. Berryessa, basque voodoo doctor, was in jail today following his arrest for practicing medicine without a license. . . . Charms and amulets, used in casting spells, formed a large part of the equipment used by the voodo practitioner, authorities believe . . . (Visalia *Times-Delta,* April 25, 1930).

Revocation of the medical certificate of Dr. John Richard Brinkley, formerly well known in San Francisco as a gland specialist, was sought yesterday by the State of Kansas. Charges of gross immorality, unprofessional conduct, fraud and deception, were filed in Topeka by Dr. L. F. Barney, former president of the Kansas Medical Society, according to an Associated Press dispatch. Brinkley, who makes his headquarters at Milford, Kansas, was indicted in San Francisco in 1924 on charges of conspiracy in connection with an alleged nation-wide "diploma mill." His extradition was demanded, but refused by the Governor of Kansas (San Francisco *Examiner,* April 30, 1930).

Members of the California Chiropractic Association, which had filed charges with Governor C. C. Young against the State Board of Chiropractic Examiners, failed to appear Saturday afternoon for the hearing they had requested. After several hours' wait for the complainants to appear, James F. Collins, director and professional and vocational standards, and Harold Landreth, private secretary to the Governor, who were holding the hearing, allowed the board to present its evidence in refutation of the written charges previously filed (Sacramento *Bee,* April 21, 1930).

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